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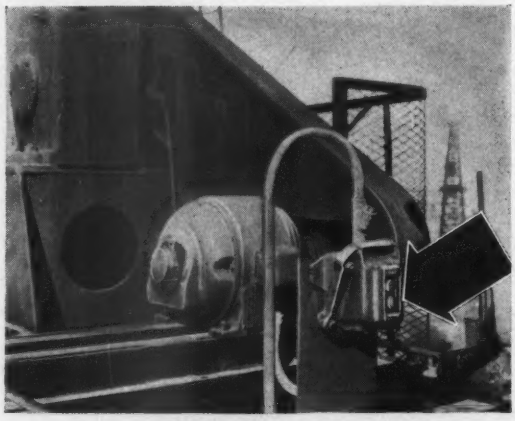

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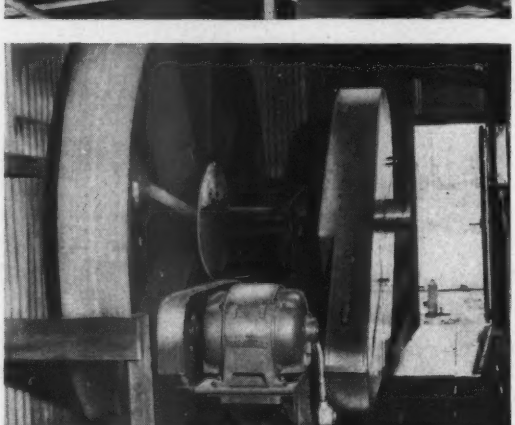

EASIEST TO INSTALL. Hundreds of old wells are now being reconditioned for profitable slow-speed pumping with trouble-free electric motors similar to this 3 horsepower unit.

EASIEST ON THE BUDGET. Repairs are few and far between with a dependable electric motor. The old wooden derrick and original pumping unit on this well have been junked.

Edison

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California Natural Gasoline Association

In 15 Years of Accomplishment

The urgent need for bringing order out of chaos in the natural gasoline industry in California resulted in 1925 in a pooling of ideas by a number of technologists to establish generally accepted "yardsticks" and methods of employing them. Harold Linhoff, Leslie Warner, and Marion Arnold, of Signal Hill Gasoline Co. (Richfield), with Henry Wade, then of J. A. Campbell Co., were working with a freezing method of determining the gasoline content of natural gas. Their objective was to perfect an apparatus which would give a condensate that had not merely been weathered, as by the old method, but which had been fractionated so as to free itself of the undesirable constituents without appreciable loss of the desirable. An attendant problem was that of accurate measurement of the sample of gas to be tested.

One afternoon, Julian Campbell recalls, when these technologists were engaged in making a test, Harold Linhoff remarked that Paul Barton, who was general superintendent of the Signal Hill Gasoline Co., was very much interested in this work and was coming down soon to witness one of the tests. Some one remarked that he would like to invite some of his friends who were engaged in test work, and the result was that a number of men from various companies were invited to come to the offices of the Signal Hill Gasoline Co., on the Hill.

Present at this meeting were J. S. Watson, E. D. Cumming, and H. F. Ridder of the Shell Co. of California; W. A. Kirk, Exeter Oil Co.; Dan Wolfe, and Tom Taggart, Standard Gasoline Co.; Harvey Parmalee, California Gasoline Co.; Paul Barton, Harold Linhoff, Leslie Warner, and Marion Arnold of Signal Hill Gasoline Co., Dan Newton, of Newton Process Co.; M. H. Scott, Vapor Recovery Corp.; Henry Wade and Julian Campbell, of J. A. Campbell Co.

Discussion at this meeting was quite free, and so much interest was aroused that some one suggested a second meeting. Dan Newton then proposed: "Why don't you fellows form an association with the purpose of working collectively on your mutual problems. Get organized; make something worth-while of this." Harold Linhoff said it would be well to contact as many men as possible and get their opinions as to the feasibility of forming such an association. Paul Barton became active in this work and at a subsequent meeting he reported that the time was ripe for going ahead with the organization. Paul was appointed chairman and notices were sent out of an organization meeting to be held at the Shell Community

Paul Barton

George L. Ratcliffe

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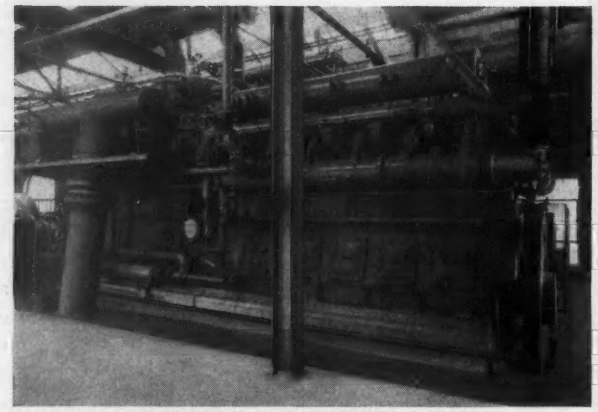

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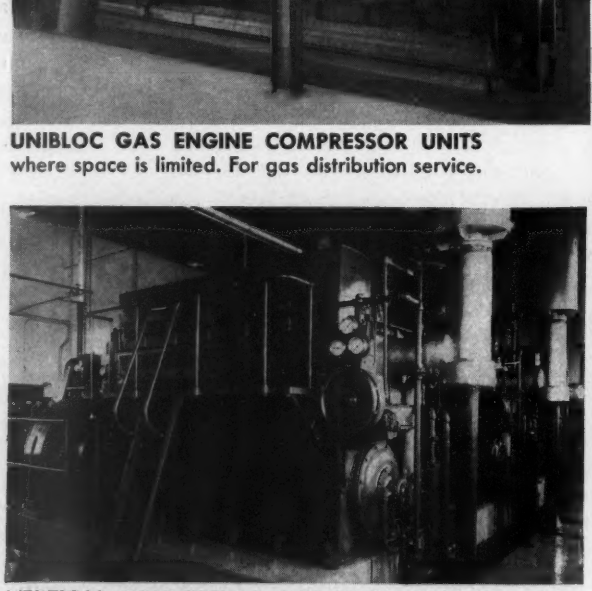

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Building (Recreation Hall) on Obispo St., at Long Beach.

At that first meeting Leslie Warner read a paper on a gasometer method of measuring accurately the amount of gas to be tested, and Henry Wade read a paper on his apparatus for fractionating the condensate while applying the carbon dioxide-snow method of extraction. It is recorded that those two first authors of the California Natural Gasoline Association had some difficulties with their model apparata and their alibis made a decided hit

J. S. Watson

with the audience, all of whom were accustomed to having their pet equipment act up when they were trying to show it off. It was decided to hold subsequent meetings in Los Angeles. Those first meetings were held at Paulais' Cafe on Broadway, and later at the Elite Cafe on Grand Avenue, and the Alexandria Hotel at Fifth and Spring Streets.

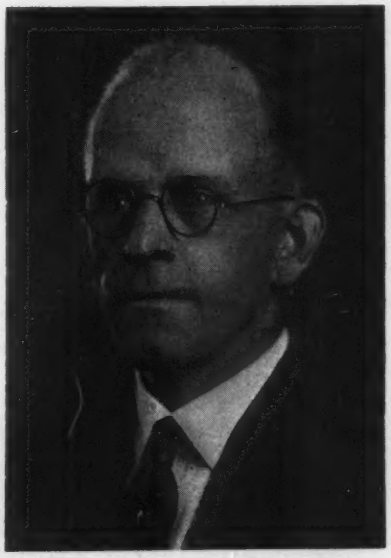
One of the earliest rules of the Association, and one which continues to be strictly observed, is that controversial issues of economic import only, should be avoided by the membership at their meetings. This is in keeping with the engineering and technical complexion of the membership. Matters between companies, such as gasoline wars, oil legislation, even the prices at which natural gasoline is sold, have been subjects on which the Association takes no stand. Naturally, some good-natured banter can hardly be avoided on some of the "real issues of the day" and majors and independents have had some verbal duels in meetings which to an outsider might sound like the "Battle of the Century."

California Oil World
is Official Publication
for the California Natural
Gasoline Association.

The passage of fifteen years would obscure the details of that first meeting which was to result in the formation of the California Natural Gasoline Association, but for the fact that the gathering was made up of men who can be proud to be classed as the "CNGA Type". That first meeting was directed to the solution of a problem, and that solution, not long forthcoming, was only the first of many which were to bring recognition to the men of CNGA as real students, who faced each working day with the expectation of uncovering some salient fact which would advance their art, and they recorded each advancing step with the fidelity of an academician and the liberty of opinion of your typical "oil man". To this day you will find the designation "Tentative" before the title of every technical bulletin issued by the CNGA, and as this story progresses you may see why CNGA does not rest on its laurels, but must, as the art reaches into new fields, continue its function as the focal point of ideas which grow into those miracles of American ingenuity.

N. H. Mull

"Getting down to cases," as the boys along Oil Creek used to hear when T. N. Barnsdall was making



H. W. Parmalee

TOO BIG BITES WON'T GO DOWN

WELL KNOWN but sometimes overlooked is the axiom "Don't bite off more than you can chew." Right now this organization and many another is faced with the problem of having nearly as much business as it can intelligently and efficiently handle. Some concerns may yield to temptation and accept too much but Fluor remains pledged to its policy of *undivided responsibility on every job it undertakes.*

For over fifty years Fluor has endeavored to satisfy its customer in every way. To do this has required the personal attention and supervision of an entire organization from president to office boy. Numerically organizations can be doubled over night but experience and ability cannot thus be expanded. Remember, a knowledge of how best to handle the task at hand from the standpoint of structural, economic and operating efficiency is the principal thing Fluor has to sell.

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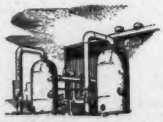

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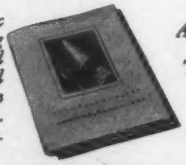

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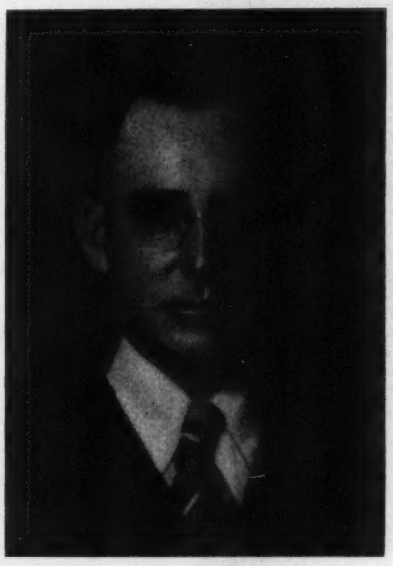
oil history, this natural gasoline business was once a terrible nuisance. The "stuff" caused a lot of trouble and made it necessary to install a lot of expensive equipment to prevent trouble. In those days they wanted a substitute for whale oil and coal oil, and the problem was "how to dispose of the explosive fluid which appeared to be held in suspension in the gas, and which seemed to bubble from the dark green crude." Then came the automobile, built to burn anything below the nonanes, including kerosene. We are are not going into old history from now on. The "young fellows" nowadays, like their industry enough to learn of its history, and the old timers know why our "infant industry" is a lever of our nation's greatness. That crude oil smell the wildcatters detect in their cores is the starting point for the manufacture of some 200,000 essential products ranging from aspirin to rubber and xylol if you want to follow the alphabet to the end.

Let us return now to that day fifteen years ago on Signal Hill. This is the way Tom Taggart of Standard Oil Co. of California records it in his diary: I was looking through my diary which records for history that I went to a meeting in the offices of the Signal Hill Gasoline Company at Signal Hill (fifteen years ago). There were representatives there from the General Petroleum, Standard, United, Lomita, Signal Hill and Pacific Gasoline & Export Refining Company. Many of the men who were there are still around. It was Paul Barton who called the meeting. But the meeting was so informal that I didn't have any place to sit, so I sat on a tin case. I found out later that it was one of those cases in which we carried around a "'Newton Tester". We were trying to arrive at a standard test for testing natural gasoline.

H. R. Linhoff

The California Natural Gasoline Association was formed in 1926 long after the compression and cooling system was supplemented by the oil absorption cycle in the process of natural gasoline extraction. The refiner was at that time awakening to the real value of natural gasoline as a motor fuel. However, the technical position of the industry was rather chaotic. The basic principles of plant design and operation were not understood, the means of testing and measurement were not standardized. The California Natural Gasoline Association owes its origin to the activity of a small laboratory group composed of Harold Linhoff, Leslie Warner, Marion Arnold, Julian Campbell, Dan Newton, Tom Taggart, Henry Wade and others which investigated the freezing and charcoal test methods as a means of determining "gasoline content" of gases for royalty proration of plant production. The numerous operators were employing many variations in testing procedures and a good deal of confusion existed. This group soon found that there were many other problems of mutual interest, and the California Natural Gasoline Association was organized to foster their solution. Some of these problems included gas metering standards, methods of testing and evaluating gasolines, sampling procedures, and later, fundamental analysis.



J. A. Campbell

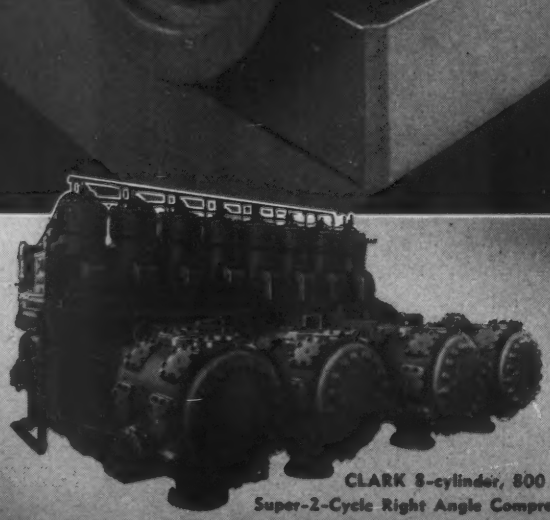
H. L. Eggleston

One of the projects sponsored more or less directly by this group was a test series of the various makes of absorbers which was conducted at Long Beach. Several makes of absorbers were set up in parallel and representatives of various companies ran tests on them. One of the men who participated in these tests was Alois Kremser, and the outgrowth of his study of the problem led to his formulation of the absorption theory concept which was released to the California Natural Gasoline Association in November, 1930. The theory has been

CLARK 800

in new combination Gasoline

Rear View CLARK 8-Cylinder, 800 H.P. "Angles" in El Paso Natural Gas Co. plant, at Jal, New Mexico.



CLARK 8-cylinder, 800 H.P. Super-2-Cycle Right Angle Compressor.

FIVE of the new 8-cylinder, 800 H.P. size CLARK Super-2-Cycle "Angle" Compressors — totalling 4,000 H.P. — were ordered and are now in service in the new combination gasoline plant and gas booster station of the El Paso Natural Gas Company, at Jal, New Mexico.

Built by the construction department of the El Paso Natural Gas Company, this new plant is one of the largest of its kind in the industry, having been designed to handle a maximum of 85,000,000 cu. ft. of gas daily. It takes gas from the wells at 19.2 lbs. pressure, strips the gasoline from it, and puts it into the trunk pipe line at 562.2 lbs. pressure.

The CLARK "Angle," due to new features and compact design, introduced several important economies. The new 8-cylinder unit represents a still further gain in compactness. 4,000 H.P.

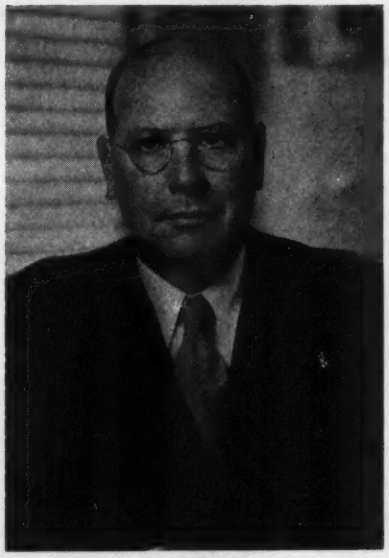
T. L. Taggart

of immense help to the industry at large, and the contribution was especially recognized this year (1941) when the Natural Gasoline Association of America gave the Hanlon Award to Mr. Kremser at their meeting in Houston.

The Royalty Test Committee completed their first standard in 1921, Bulletin TS-281, "Procedure for the Charcoal Test for the Determination of Gasoline Content of Natural Gas."

During this time the problem on standardized gas measurement was receiving constant attention. The source of difficulty at the time arose from the fact that there was no standard definition for the cubic foot. Each company applied its own pressure base to gas measurement operations, and many complications arose in gas sales and exchanges. The work of the committee led to the preparation of Bulletin S-282, "Absolute Pressure for Natural Gas Measurement," issued in 1928. It gave a standard cubic foot to the Pacific Coast industry which was soon adopted by all operators.

Not very long after the California Natural Gasoline Association was organized, analytical fractionation became available as an instrument for showing the composition of gases and gasolines. The California Natural Gas Association recognized the great value of this tool immediately and a committee was formed for the purpose of standardizing the apparatus and testing procedure. This committee did an outstanding piece of work in adapting the basic features of widely different laboratory designs and converting this complicated procedure into an every-day practical tool. Two bulletins were issued, TS-311, "Tentative Standard Method for Analysis of Natural Gasoline by Fractional Distillation," and TS-321, "Tentative Standard Method for Analysis of Natural Gas by Fractional Distillation."



P. S. Magruder

Outstanding in importance was the California Natural Gasoline Association's first Fall Meeting, a two-day session in November, 1927. As a special feature, the Association brought Dr. George Grainger Brown of the University of Michigan to Los Angeles to give a paper, "Importance of Natural Gasoline as a Constituent of Motor Fuel." This paper covered an extensive research project sponsored by the Natural Gasoline Association of America to demonstrate the value of natural gasoline. This paper stressed the importance of "volatility", and emphasized the need for vapor pressure control. Dr. Brown returned to the 1928 Fall Meeting to give a valuable talk covering the following subjects as fuel volatility and motor performance, the effective volatility of motor fuels of different distillation characteristics, and vapor lock — its cause and prevention. Mention should be made, also, of Dr. W. J. Podbielniak's paper, "Use of Gas and Gasoline Analysis in the Practical Operation of a Gasoline Plant."

The period 1928-1930 is notable for the fact that gasoline rectifier installations were made in a large number of California plants. These installations fractionated from natural gas the wild fractions which were so undesirable from the standpoint of motor fuel blending. This development was accompanied by a change in gasoline quality control from the I.C.C. vapor pressure and the Engler distillation tests to the Reid vapor pressure test. A California Natural Gasoline Association committee was active on this problem, and in 1931 the Association issued Bulletin TS-352, "Tentative Standard Method of Test for the Reid Vapor Pressure of Natural Gasoline," which presented the Reid test very much in the form which it is used today.

Continuing work with reference to the measurement of natural gas, the California Natural Gasoline As-

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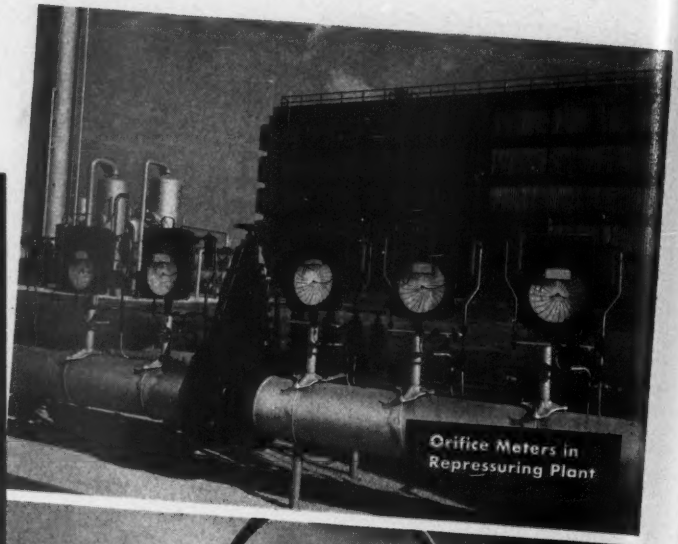
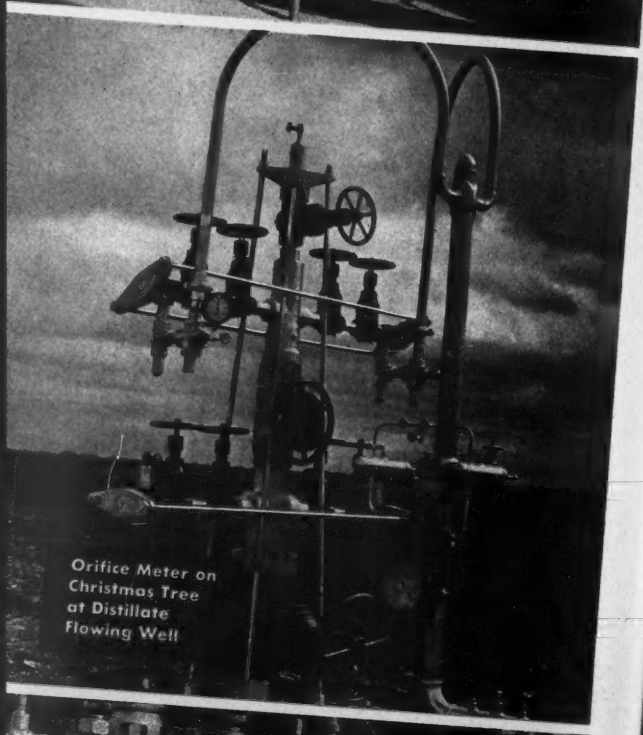
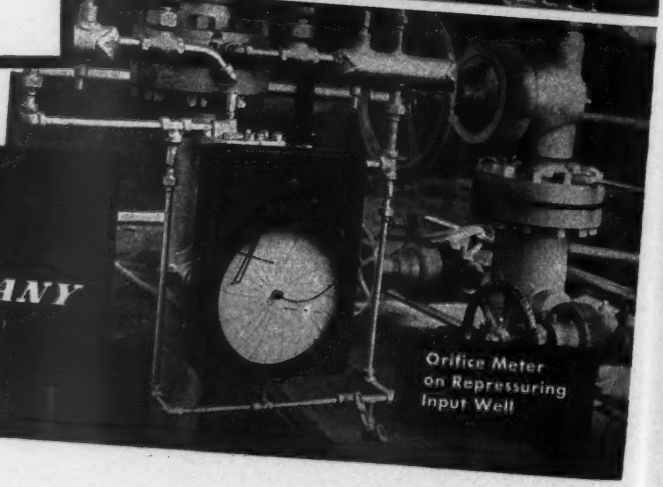


Orifice Meters in Repressuring Plant



Orifice Meter on Christmas Tree at Distillate Flowing Well



Orifice Meter on Repressuring Input Well

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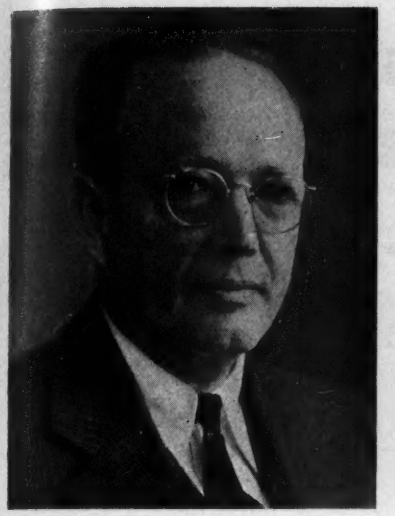
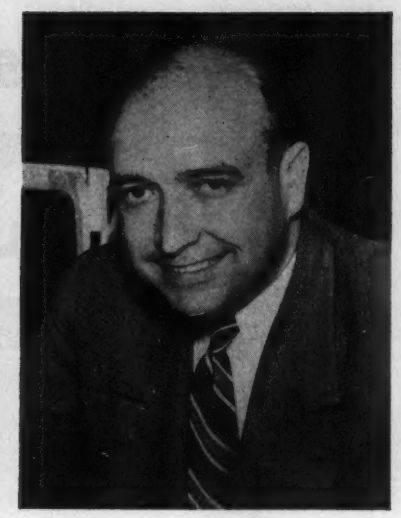


Henry N. Wade

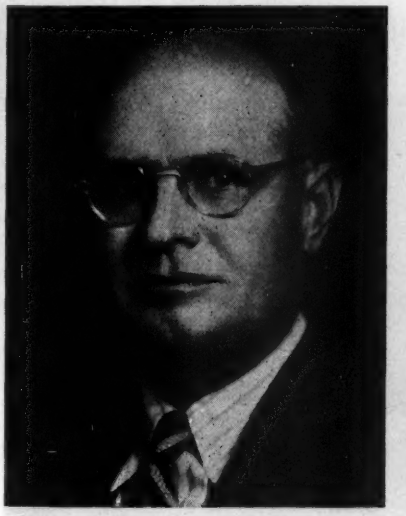


Ed Ragatz

Alois Kremser

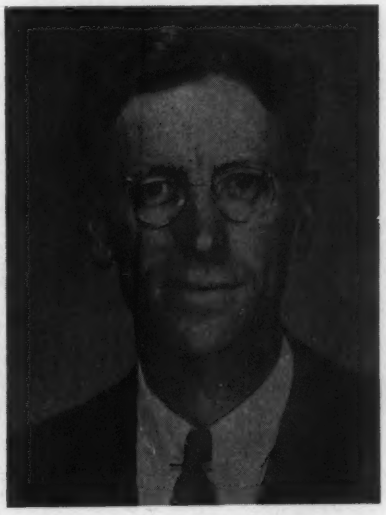
sociation has made four important contributions since the 1928 bulletin was issued: Bulletin TS-354, "Tentative Standards for the Determination of Superexpansibility Factors in High Pressure Gas Measurement," gave standards for applying Boyle's Law correction factors in high pressure measurements, including a correlation between specific gravity and deviation factors which has made it unnecessary to run the more or less complicated deviation tests. Bulletin TS-353, "Tentative Standard Procedure for the Measurement of Natural Gas with Orifice Meters," put the revised American Gas Association gas measurement coefficients in a form for application, thus giving the Pacific Coast industry the most accurate up-to-date measurement system available today. Bulletin TS-391, "Tentative Standard Method for Determining the Specific Gravity of Gases," gave standards for specific gravity tests, and Bulletin TS-402, "Tentative Standard Procedure for the Determination of the Corrected Hourly Gas Coefficient Used in the Measurement of Natural Gas by Orifice Meter," just completed, effected simplifications and uniformity in gas metering computations which retain a high degree of accuracy and at the same time reduce the necessary computations to a minimum. It should be mentioned that the Pacific Coast Gas Association and the Southern California Meter Association have actively cooperated with the California Natural Gasoline Association in the preparation of the gas measurement standards TS-353 and 391 by furnishing representatives on the working committee.

The California Natural Gas Association has played an active part in the development of liquefied gas standards, as is evidenced by Bulletins TS-381, "Tentative Standard Method for Proving Positive Displacement Meters to Measure Nat-



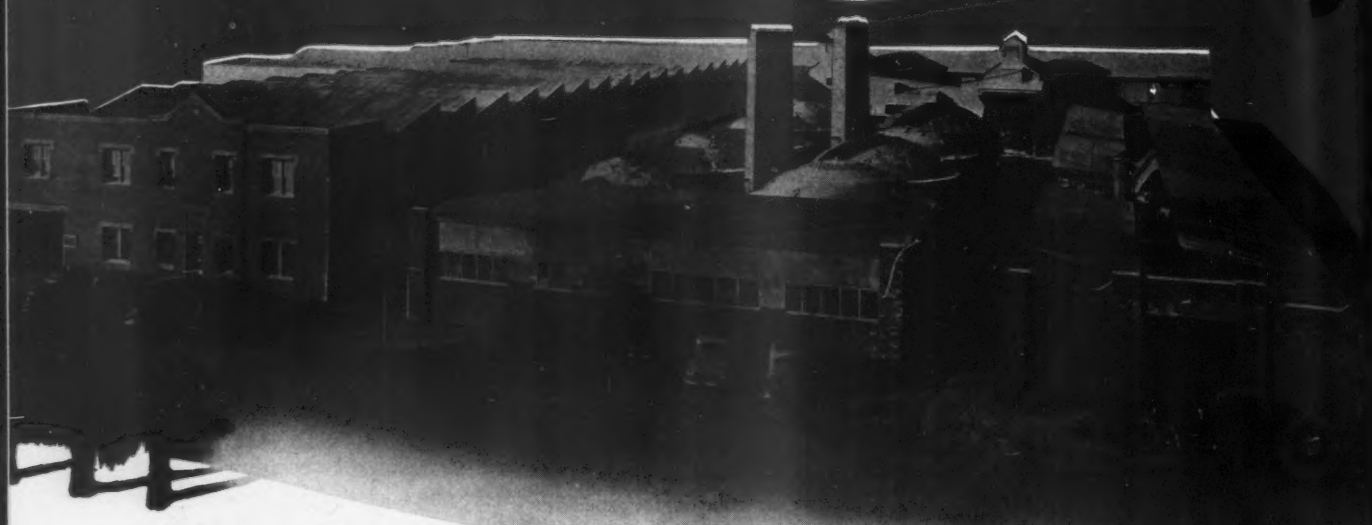
J. E. Aderhold, Jr.

J. C. Burks



Roy M. Bauer

IN STEP WITH THE NEEDS OF THE OIL INDUSTRY



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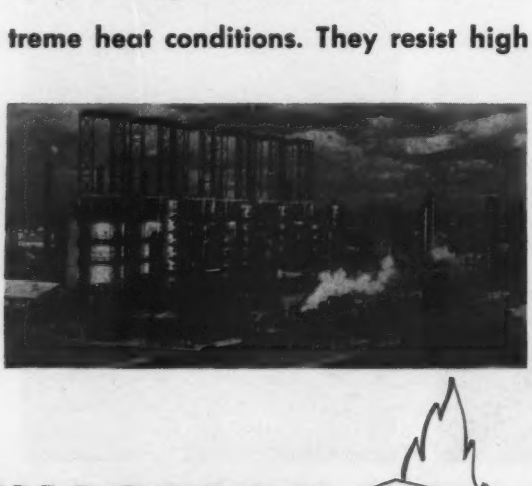

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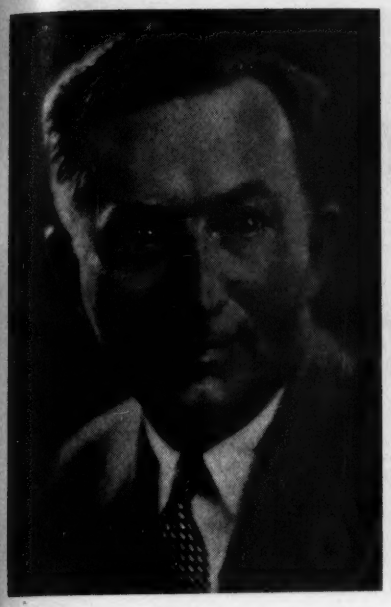
SOUTHERN CALIFORNIA REPRESENTATIVES FOR GENERAL REFRACTORIES CO.



William Moeller, Jr.

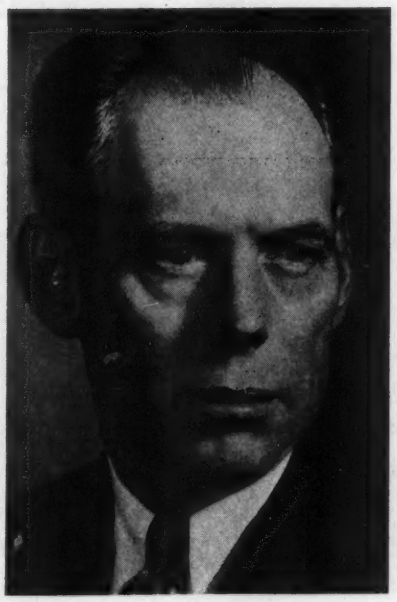
Doug Balthis

C. L. McCartney

ural Gasoline," and TS-392, "Tentative Specifications and Tentative Standard Methods of Test for Liquefied Petroleum Gases."

The California Natural Gasoline Association has cooperated with the Natural Gasoline Association of America, American Petroleum Institute and American Society for Testing Materials in the preparation of national standards, such as the Reid vapor pressure test, tank gauging, gas measurement, gasoline sampling, etc. In addition to the preparation of the bulletins on standardized inter-company procedures, the California Natural Gasoline Association has contributed a great deal to the industry at their monthly meetings, as well as their all-day Fall Session meetings, in furnishing a forum for the presentation of papers and discussions affecting natural gasoline operations and reflecting future trends in the industry. The California Natural Gasoline Association has actively sponsored contacts with the Pacific Coast educational centers, such as the California Institute of Technology, the University of Southern California, Stanford and the University of California. In this connection, mention may be made of the splendid papers which have been presented to the Association by Professor L. C. Uren, Professor W. N. Lacey, Dr. B. A. Sage, Professor J. F. Dodge, Dr. Stanley Herold, Professor Robert Vivian.

These reminiscences were followed by an outline of activities which gives the key to the success of the California Natural Gasoline Association. Reporting, as chairman of the Technical Committee, M. W. Kibre, of General Petroleum, summed up the current projects of the association as follows:



C. D. Gard

The Technical Committee's activities are not what might be termed of a purely research nature but rather cooperative endeavors to avoid duplication of effort throughout the industry by the sharing of experience and ideas. The value of the work, therefore, is not only confined to the actual publication of standardization bulletins but also includes the benefits realized by the participating membership in training which undoubtedly repays their employers many-fold for the time contributed. Each bulletin issued by the Technical Committee and its subcommittees should be a distinct source of pride to every organization which has made it possible. In spite of well merited individual pride which some members can take for a particular contribution, nevertheless all ideas are thrown into a common melting pot and the finished work bears the anonymity derived from a complete concerted effort of the whole group.

Technical studies dealing with problems of extreme interest to the natural gas and gasoline industry which this association is sponsoring, are being actively conducted by the Technical Committee and its

CONGRATULATIONS

TO

CALIFORNIA NATURAL GASOLINE ASSOCIATION

On your Fifteen Years of Continuous Service and For Your Unequaled Contributions Which Have Given the Natural Gasoline and Petroleum Refining Industry the Yardsticks, Meter, and Standard of Quality Which Have Removed the Uncertainties and Conflicts of Yesterday.

ALLIED SUPPLY COMPANY

Los Angeles Bakersfield

Oil Industry Representatives For:

American Cable Company, Wilkes-Barre, Pennsylvania, wire rope.

Bethlehem Steel Company, Bethlehem, Pennsylvania, wrought steel pipe.

Chain Belt Company, Milwaukee, oil well chains.

Everlasting Valve Company, Jersey City, valves.

Manning, Maxwell & Moore, Bridgeport.

McCord Radiator & Manufacturing Company, Detroit, lubricators, and measuring pumps.

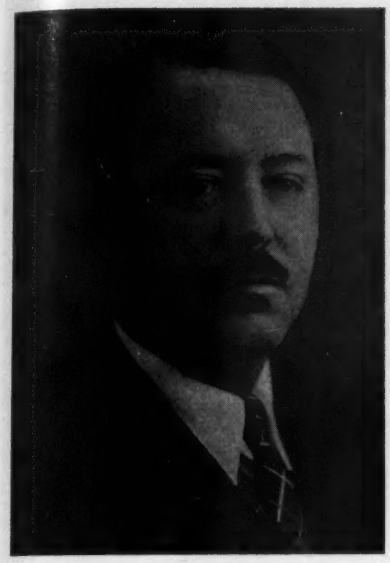
National Transit Pump & Machine Company, Oil City, Pennsylvania, pumps, engines.

William Powell Company, Cincinnati, valves.

Tube Turns, Inc., Louisville, tube turns, welding fittings.

Tubbs Cordage Company, San Francisco, Manila rope.

Watson-Stillman Company, Roselle, New Jersey, forged steel fittings.



Walter Dayhuff

eleven sub-committees composed of representatives from twenty oil companies, four utilities and four consulting engineer groups. Twenty-one men comprise the Technical Committee under whose direction the sub-committees, with a membership of upwards of ninety men, are studying the problems of the industry relating to:

(1) Gas Measurement; (2) Fractional Analysis; (3) Hydrogen Sulphide; (4) Truck Gauging; (5) Physical Constants; (6) Charcoal Testing; (7) Sample Containers; (8) Safety; (9) Liquefied Petroleum Gas; (10) Revisions to Bulletins; (11) Gas Engines and Compressors.

Prior to the organization of the California Natural Gasoline Association the Pacific Coast industry had been faced with the lack of a good test for determining the gasoline content of gas. Many different test methods were in use but all lacked the ability to efficiently remove the gasoline from the gas in a simple and direct manner. Many test methods were in use, among which were modified Orsat procedures and approximations based on the increase in volume of a fixed quantity of absorption oil—or the recovery of the gasoline absorbed by a fixed quantity of absorption oil.

The most promising test which the majority were using and which caused the greatest amount of argument was the charcoal test. Each company was applying the test according to its own ideas and the result was confusion. It did not matter whether it was a major oil company versus another major, or major versus independent, the application of the method to royalty testing was resulting in a variety of test values with none agreeing with the inevitable complication of contractual relationships by the failure to check. Further, there was no common basis for applying the charcoal test to plant control as is illustrated by the following incident:

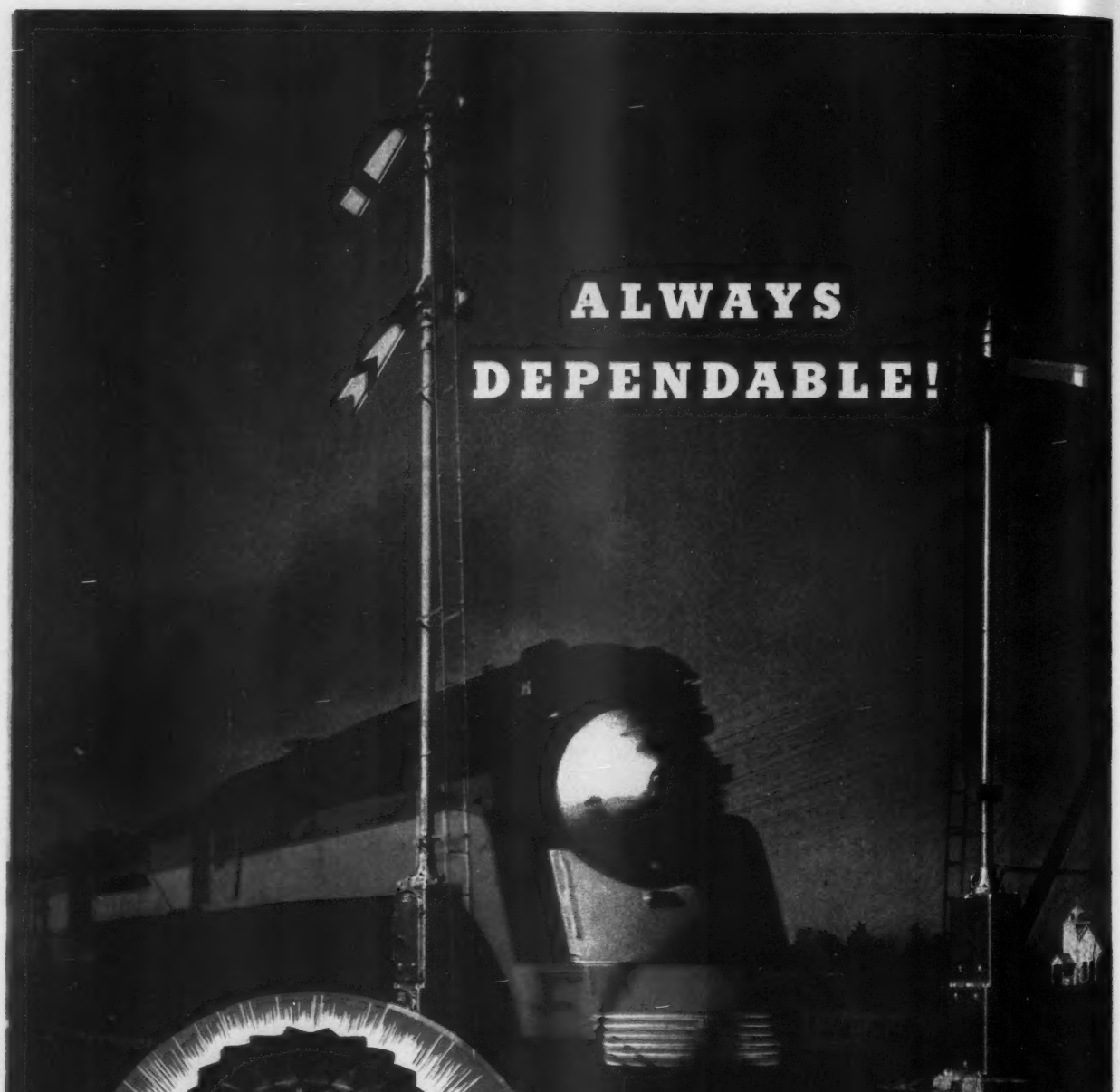
W. W. Robinson, Jr.

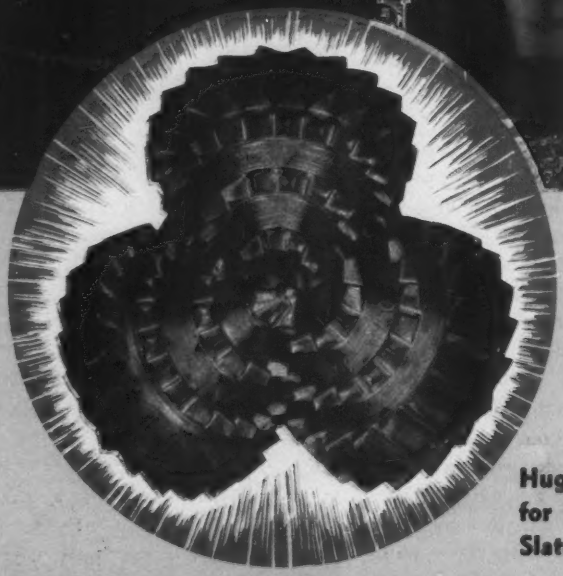
Just before the California Natural Gasoline Association came into existence several companies were invited to take part in the cooperative testing of a set of absorbers at one of the gasoline plants. When the participants arrived it was noted that all of the charcoal tubes differed in dimension; all of the sampling procedures differed—some using temperature rises, while others did not; some were using pressure distillation equipment while others were distilling the gasoline from the charcoal at atmosphere; the type of charcoal used varied in grain size, little attention being paid to its activity, and the values used in calculating test results were far from uniform.

The California Natural Gasoline Association's first job became that of preparing a standardized procedure for royalty testing which could also be used in plant testing. This resulted in a bulletin which was later revised to incorporate better procedures and which, in its present form, is notable in that it includes a procedure for rectifying the test condensate, enabling direct comparisons in royalty testing and plant testing on a uniform vapor pressure basis throughout the state. The bulletin contains detailed instructions on the saturation of charcoal; the procedure of distilling at 30 lbs. pressure and 32°F. with subsequent rectification; and the calculation of results. Specifications for material and equipment; the calibration of test meters; the reactivation of spent charcoal; and the determination of the activity of charcoal are now covered exhaustively.

Early in 1927 a Metering Committee examined current Pacific Coast practices in computing gas volumes measured by the orifice meter and found that seven different absolute pressures were being used in computing meter coefficients. The pressures ranged from 14.40 lbs. to 14.70 lbs. absolute. With

M. W. Kibre





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W. N. Lacey

such variations in pressure bases it became evident that seven different units of measurement were being used, resulting in as many designations of what a cubic foot of natural gas was.

In the words of the committee's report, "Since the weight of a unit volume of gas does not change, and neither does its heat content, it is apparent that through the use of different units of measurement the unit volume will change and the heat content per unit volume will be different. Therefore . . . it is necessary to know the absolute pressure base used in establishing the unit of measurement.

"In establishing the unit of measurement, in this case the cubic foot, two conditions must be known. The first is the base temperature to which the standard cubic foot is to be referred, and the second is the absolute pressure to which this unit of measurement is to be referred."

In making its recommendations, the committee pointed out that inasmuch as the accepted pressure standard used in gas testing work and in the manufactured gas industry is 30 inches of mercury (14.733 pounds per square inch) that a similar standard absolute pressure should be adopted by the Pacific Coast natural gas and gasoline industry.

Since its adoption in 1928, interest in the standard cubic foot measured at 14.733 and 60°F. has steadily increased in other centers of the natural gas and gasoline industry. In this connection it is heartening to note that the American Petroleum Institute has inserted the 14.733 absolute pressure at the head of the list of absolute pressures shown in Code 50-A by the recent publication of a supplement thereto.

In 1926 the stabilization of natural gasoline to improve distillation and vapor pressure characteristics began to attract the attention of

W. H. Geis

western gasoline manufacturers. But the stumbling block to laboratory and engineering considerations was the lack of a reliable and rapid analytical method for the determination of the natural gas and gasoline hydrocarbons in plant gases, vapors and liquids.

In 1926, 1927 and 1928 a great deal of work was done in California in an attempt to develop low-temperature fractional analysis procedures. The General Petroleum Corp. of California was experimenting with a method developed by the Carbide and Carbon Chemicals Corp.; The Texas Co. had built and was operating a modified Shepherd-Porter apparatus; the Lomita Gasoline Co. had partially developed a procedure; the Standard Oil Co. of California was carrying on experimental work; and the O. C. Field Gasoline Co. had installed an apparatus developed by Dr. W. J. Podbielniak at the University of Michigan.

Everyone was using different analytical procedures. Fractionating column dimensions varied, receiving bottles differed in size and in calibration, and distillation and receiving pressures were not uniform. Distillation rates went from one extreme to another, the preparation and location of thermo-couples varied widely, sample-introduction procedures were all different, and the physical constants used in the calculation of results were not uniform.

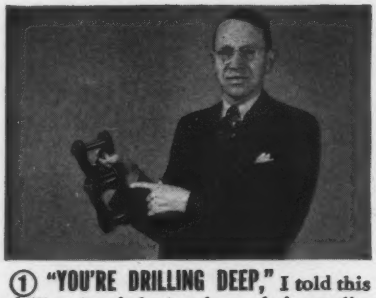
The California Natural Gasoline Association decided to invite the experience and opinions of all laboratories and the contribution of any individual accomplishments toward the preparation of a bulletin covering standardized equipment and procedure, and the addition of any improvements in apparatus or procedure which would make for simplification, economy of construction and operation or contributing to accuracy.

B. H. Sage

"OF COURSE I WANT LOWER COST PER FOOT OF HOLE," HE SAID

*THE REX MAN

. . . AND THEN I* TOLD HIM HOW TO GET IT!

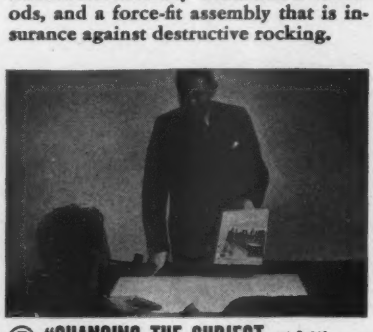


① **"YOU'RE DRILLING DEEP,"** I told this driller, "and that's where chain quality shows up most. When you get thousands of feet of drill stem down in the hole, 'sissy' chains just have to wear!

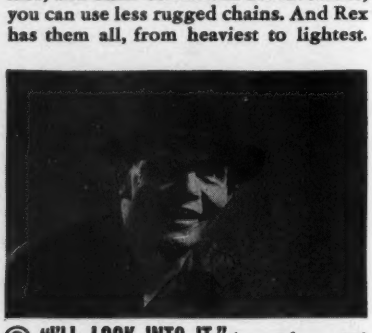
② **"REX CHAMPION IS WHAT YOU WANT!** Look at these accurately forged side bars, better-than-ordinary lubrication methods, and a force-fit assembly that is insurance against destructive rocking.

③ **"SURE, CHEAPER CHAINS** have their place. When the oil lies close to the surface, and other conditions are favorable, you can use less rugged chains. And Rex has them all, from heaviest to lightest.

④ **"AND FOR YOUR MECHANICAL RIGS,** remember that Rex roller chains can cut the cost of chain per foot of hole on 'slim hole' drilling just as effectively as Rex rotary chains do on heavier work.



⑤ **"CHANGING THE SUBJECT,** I'd like to tell you something about our new Mud Conditioner, which is a natural for removing shale, sand and cuttings faster and at low cost, with minimum maintenance."



⑥ **"I'LL LOOK INTO IT,"** he told me. "If Rex can help me get lower cost per foot of hole—and help my mud conditioning problems, too—it's worth investigating!" . . . Visit *your* Rex supply store soon!

P.S. *Investigate the Big Four of the oil fields—Rex Champion, Universal, Deepwell and Standard. Check up on Rex Roller, too, mentioned in the above imaginary conversation. Also ask for the latest news on the Rex Mud Conditioner presented in the folder above. See your Rex supply dealer or write our home office. Address,* 1627 *W. Bruce St., Milwaukee, Wisconsin.*

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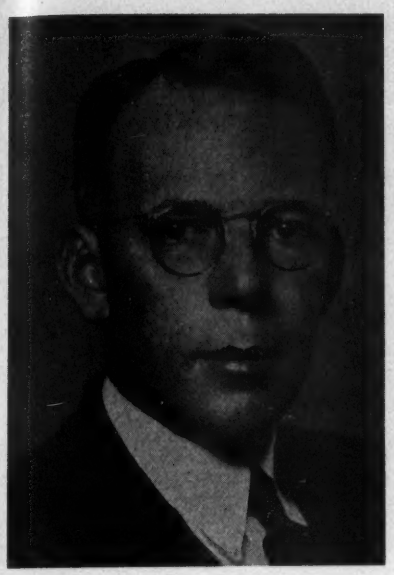

Earle W. Gard

While the Fractional Analysis Committee was making its study, two papers were read before the California Natural Gasoline Association which reemphasized the value of improving and standardizing the procedure. In February, 1930, Dr. Alois Kremser of the Standard Oil Co. of California presented his mathematical analysis of relations underlying the oil absorption process as applied to natural gasoline extraction; and in July, 1930, W. M. Schaufelberger gave the results of Standard of California's experimental work on the analytical fractionation of hydro-carbon mixtures. Mr. Schaufelberger's paper was examined by the Fractional Analysis Committee and was found to contain several items which would contribute substantially to simplification and economy of construction, notable among which was the removable reflux condenser which could be fabricated separately and the use of which would eliminate the rigidity of units made with jacket, column and head all fused together.

The result of the standardization program was the publication of two bulletins—one for gas and one for gasoline—which reconciled the differences between laboratories and which gave the Pacific Coast gasoline industry a simplified and economical apparatus with the reflux head described by Mr. Schauefelberger and incorporating many improvements and simplifications donated to the committee by the laboratories of the Lomita Gasoline Co., the Superior Oil Co., the Shell Co., the General Petroleum Corp., the Standard Oil Co., the Union Oil Co., the Richfield Oil Co., the Chanslor-Canfield Midway Oil Co., and The Texas Co. The improvement and standardization of low temperature fractional analysis is felt to be one of the most important California Natural Gasoline Association contributions to western gasoline plant technology.

Not only is practically all of the Pacific Coast's natural gasoline production stored under pressure and shipped by pipeline, but the general procedure of exchanging natural gasoline is practiced extensively throughout the state. Therefore the California Natural Gasoline Association was glad to be among those assisting in the formation of the American Petroleum Institute's Tentative Code 50-B by contributing a procedure for the gauging of natural gasoline in pressure storage. The complete gauging procedure, as covered in the Association's bulletin, is supplemented by data on the

A. H. Bell

W. L. Cowan

specifications for and location of sample taps, pressure and atmospheric sampling methods, sample containers, instructions for strapping vertical and horizontal tanks, procedures for the determination of specific gravity by hydrometer and balance, and the extension of the Saybolt color method to use the half-disc in the plus-30 range. Data were also contributed on the sampling of natural gas for the preparation of A.P.I. Tentative Code 50-A.

The advent of the Reid Test into California came at a time when an intensive search was being made for a test method superior to the old Bureau of Explosives procedure. Everyone was dissatisfied with the B. of E. apparatus. One opinion summed up the old method as being the measure of the increment of vapor pressure between 70° and 100°F., whereas the Reid Method gave a close value of the composite vapor pressure at a specified temperature.

While the C.N.G.A. Vapor Pressure Committee was at work on the bulletin on the Reid Method, A. S. T. M. was formulating a tentative standard procedure to cover the Reid Method and C.N.G.A. was invited to participate. In this participation C.N.G.A. and N.G.A.A. were brought together and the mutual discussion of the question brought

INGERSOLL-RAND COMPRESSORS IN THE NEW 60,000,000 CFD *RECYCLING PLANT* OF THE *GASOLINE PRODUCTION CORPORATION*

At Grapeland, Texas, the Gasoline Production Corporation is operating a new recycling and natural gasoline plant with unusual economy and efficiency. Although only 950 hp of gas-engine-driven compressors are installed, this plant handles approximately 60,000,000 cu. ft. of gas per day. One compressor is a 650-hp Type LVG, and the other is a 300-hp Type XVG—both Ingersoll-Rand.

Stripped high-pressure gas is compressed to 2400 lbs. for delivery to the sands. Suction to the compressors from the absorbers is 1850 lb. Both compressors have double-acting steel cylinders.

LVG and XVG compressors are substantially built and conservatively rated for continuous, heavy-duty service. Among many outstanding advantages are the inherent reliability and simplicity of 4-cycle engine design.

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out the fact that C.N.G.A. had overlooked the effect of dissolved air on the test results. Yet, in checking back over past plant experiences, many instances were found where dissolved air had played tricks with vapor pressure. Tanker, tank truck and tank car shipments had a higher vapor pressure at the destination in spite of outage losses.

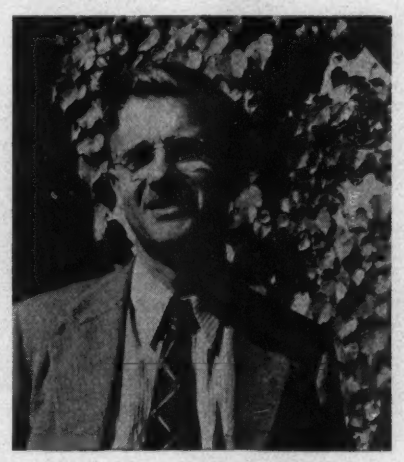
The effect of air-saturation was then examined and joint agreement came about when it was found that pre-saturation with air was necessary when the vapor pressure was 26 lbs. Reid, or lower, while the pressure sampling procedure was necessary when the vapor pressure was higher than 26 lbs. C.N.G.A. also joined with N.G.A.A. in recommending to the Bureau of Explosives that the Reid Method be adopted to succeed the old B. of E. Method.

The final C.N.G.A. bulletin on the Reid Method described both the air-saturation and pressure methods, gave the structural details of the apparatus, instructions on calibration, and precautions on sampling.

After the standardization of the absolute pressure base the procedure of gas measurement was not given specific attention until Report No. 2 of the American Gas Association's Gas Measurement Committee was published.

The A.G.A. report could not be applied as published because there were practical factors related to gasoline plant and field measurement problems which had to be taken into consideration and the absolute pressure used in the report was 14.4 lbs. and the tables would have to be recalculated to 14.73 lbs.

A joint Gas Measurement Committee was formed between the California Natural Gasoline Association, the Pacific Coast Gas Association, and the Southern California Meter Association. A bulletin was set up, based on the A.G.A. report, and the necessary recalculations made. No limits were set up as to practical application. In its present form the bulletin contains gas hourly coefficients for flange and pipe connections, expansion factors, specific gravity factors, temperature factors, recommended locations of pressure connections, a standard procedure for computing coefficients and charts, and construction and installation specifications.



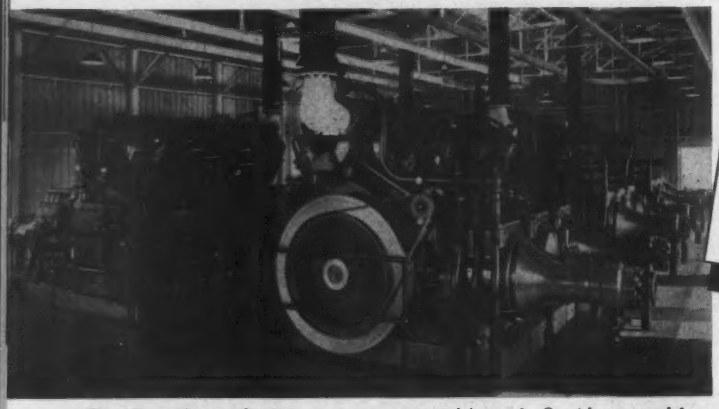
D. A. Smith

The high pressure transportation of natural gas had long carried with it the annoying deviation from Boyle's Law, and as far back as 1925 one Pacific Coast oil company had been endeavoring to apply corrections. The development of the Kettleman Hills and other high-pressure gas fields only served to re-emphasize the difficulty and many utilities measured high pressure gas into a transmission line and got more out at the terminal end than had been measured in. The work of H. S. Bean of the U. S. Bureau of Standards on the deviation of gases from Boyle's Law was receiving support from various western interests but it was felt that the government work might be slow in taking form; so two oil companies working independently with one of the utilities built apparatus for the determination of deviation factors. After the conclusion of the Bureau of Standards work it was found that the latter apparatus, though differing in arrangement from those built

Good? Sure!...

Or They Wouldn't Order More!

Royalite Oil Company, of Canada, was the first purchaser of Type G-MV compressors. Here are three more 400-hp units recently installed by the same company in South America.



The first Type G-MV compressor sold to J. S. Abercrombie Company has been followed by thirteen more of these 600-hp units.

Four 400-hp Type G-MV's for Tide Water-Seaboard companies have been augmented by two "sixes" and another "four."

Type G-MV compresso units have gone int many plants as "tria horses." Invariably, they performed so efficiently ... pleased hypercritical own- ers so well ... that orders for more G-MV's followed quickly!

There are good reasons for their success ... engineering features by the dozens! If you want details, write for the new Bulletin G-MV.

The first two G-MV's for Southern Natural Gas Company we into their Selma station. "Southern Natural" has since ordere 10,600 G-MV horsepower.

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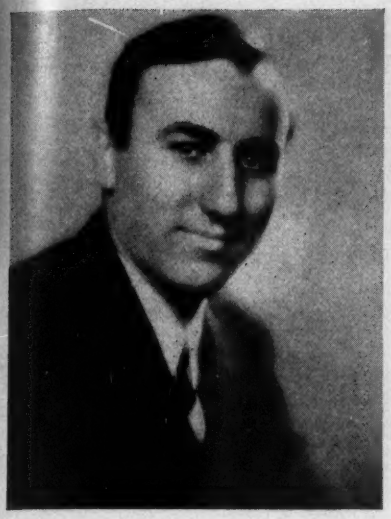


F. N. Laird

E. D. Cumming

J. S. Gallagher

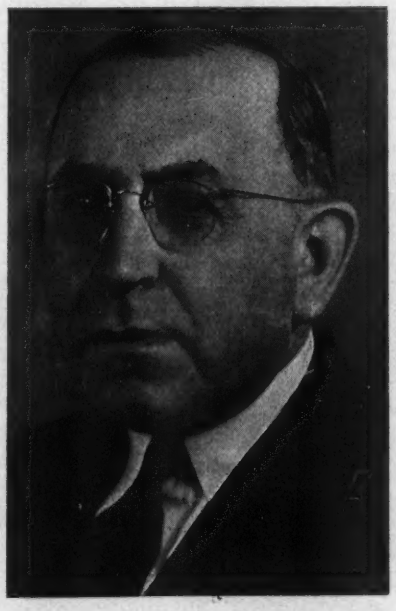
independently in California, was the same in principle and with comparative test results in agreement.

The determination of deviation factors involves a long and tedious test procedure. Therefore, the individual workers soon agreed that the development of a short-cut procedure would bring about substantial savings in time and money. At this point, C.N.G.A. started with the correlation of the individual work, using the devices built in California. A program of work was laid out to determine the effect of temperature, pressure and specific gravity on superexpansibility factors. The standardization of both the Bureau of Standards procedure and that pertaining to the instrument developed by Mr. Beckman of the Pacific Gas & Electric Co. was also part of the committee's assignment.

The program of investigation developed successfully and in addition to the standardization of the aforementioned procedures, data were obtained and correlated which led to the development of practical relations for interpolating deviation curves at various pressures and temperatures; and finally, the development of a relationship between the deviation factors and the specific gravity of natural gases.

In its published form, the superexpansibility bulletin contains the description, adjustment and calibration, sampling and testing procedure and instructions in the computation and application of results for both the Bureau of Standards and Beckman or P. G. & E. apparatus. The relationship between deviation factor and specific factor and specific gravity holds well through the pressure range up to 500 psi and a specific gravity of 1.5. The relationship beyond these limits has not been examined exhaustively.

Several years ago it became evident that the use of the positive displacement meter for measuring natural gasoline contributed important advantages in that such a device would measure accurately, permit continuous shipping, enable low plant storage volumes; add materially to safe operation, and render more accurate volume measurement in the operation of stills and rectifiers. The perfection of this mode of measuring liquids has not only added to the use of the device in gasoline operations, but has led to its acceptance in other departments of the oil industry.



John Rogers

After the advantages of the displacement meter were confirmed, it then became necessary to develop ways and means of a proper calibration and check on the accuracy of fluid output. This led to the development of a bulletin covering two types of calibration apparatus, provisions for carrying out the proving, the derivation of correction factors and their application.

Two other phases of gas and gasoline plant operation which have received the attention of C.N.G.A. toward standardization are the various methods for testing lean absorption oil and the various methods for determining the specific gravity of gases.

In the case of testing lean absorption oil, a bulletin was prepared which covered sampling precautions in detail, the determination of specific gravity, and distillation proced-

Harry Fiske

P. H. Jones

ures either by the Hempel method or by a modified Engler apparatus. A method was included for the determination of vapor pressure, the arrangement of a modified Beckman apparatus for molecular weight, and the application of the Saybolt Universal instrument to determine viscosity. Gum content, B. S. & W., shrinkage upon application of alkali and acid and the emulsifying characteristics were also covered in detail and specific procedures recommended.

An exhaustive practical manual was developed covering methods for the determination of the specific gravity of gases. The methods described and discussed in detail were the Edwards' balance, Acme suspension balance, Anubis direct reading balance, the Globe weighing method, effusion method, and the calculation of specific gravity from a gas analysis. Indicating and recording gravitometers were also included.

After two years of deliberation, C.N.G.A. concluded that the setting of six standard grades, each designated by a letter and limited by a maximum vapor pressure, would greatly simplify the utilization of liquefied petroleum gases. These C.N.G.A. grades have been carefully selected to embrace what has been judged to be the most representative group of the various liquefied petroleum gas mixtures now marketed. It is believed that the acceptance of these six grades by the western industry would permit standardization of future installations of storage facilities and utilization equipment. It was further felt that any complete specifications must also provide for the purchase and sale of those liquefied petroleum gases with vapor pressures below the maximum for their grade which are required because of limitations of existing storage facilities and utilization equipment. This is provided for by setting a system of nomenclature which describes and identifies any liquefied petroleum gas in any of the six standard grades without regard to whether its vapor pressure is the maximum of the grade or not. The specifications in the C.N.G.A. bulletin then provide within their scope for the sale and purchase of any liquefied petroleum gas, even though its vapor pressure is less than the maximum grade.

In the section covering test procedures, detailed instructions are given for the determination of endpoint characteristics, vapor pressure and specific gravity either by bomb method or by the use of the hydrometer.

Recently the Association began to realize that in the painstaking work of preparing technical literature it had incurred the added obligation of keeping the literature up to date. In the distribution of single copies it is impossible to carry out any comprehensive follow-up program to supply inserts or revisions, or completey revised bulletins.

This situation brought about the preparation of what is termed the Master Bulletin—or a large folder containing all of the bulletins suitably indexed for ready reference. The names and addresses of all holders of master bulletins are kept on file and as revised sheets or new

George Tyler

D. B. Johns

THE SHELL PHOSPHATE PROCESS

SELECTIVELY REMOVES H_2S FROM SOUR NATURAL GAS (OR INDUSTRIAL GAS) CONTAINING CO_2

DIRECT FIRING CAN BE USED IN THE REGENERATION OF THE FAT SOLUTION

These are just two of a number of characteristics of the Phosphate Process which can provide you capital and operating economies

SHELL DEVELOPMENT COMPANY

100 BUSH ST., SAN FRANCISCO

LICENSORS: Shell Phosphate Process, Shell Solutizer Process, and Shell Regenerative Mercaptan Removal Process

T. R. Beauchamp

bulletins appear they are automatically supplied with what is needed to keep the master bulletin up to date.

The inevitable end-product of standardization is **simplification** and simplification saves money. Uniform test methods remove the disturbing arguments which can complicate contractual relationships. The exchange of gas and gasoline is simplified even though the exchange points are widely separated and the gas or gasoline differing in

W. Shellshear

properties. Plant performance can be discussed on a comparable basis, thereby simplifying engineering procedure. Even with unlimited resources it would be impossible for any one concern to attempt to accomplish alone what the Association has accomplished collectively over the past 15 years.

In terms of the Association's literature it can be seen that standardization has contributed to the most efficient ways of handling natural gas, our raw material, operating our plants and handling the finished product: natural gasoline. A good charcoal test procedure for royalty and plant testing is available which gives comparable results on a uniform vapor pressure basis. A uniform pressure base, and a gas measurement procedure based on the best technical data results in a sound gas measurement practice.

Good plant operation and a good finished product go hand in hand. A low temperature fractional analysis apparatus which is economical to build and analytical procedure which gives reproducible results has made possible efficient plant control. Reliable lean oil tests, accurate gauging and sampling procedures and provers for checking displacement meters add their weight on the side of effective plant engineering. The simple Reid Test with the accurate reproducibility of results makes possible a basis for the purchase and sale of natural gasoline. And last but not least an important step has been taken in simplifying the relationship between manufacturer and distributor of liquefied petroleum gas.

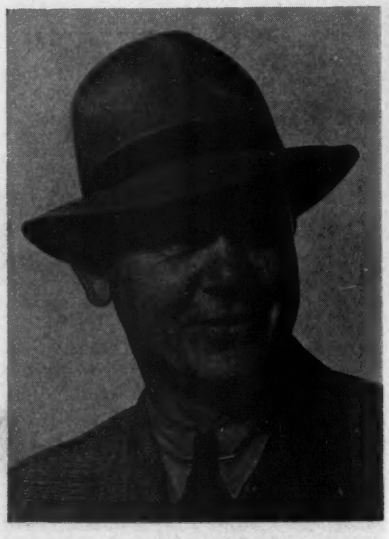
Standardization work is self-perpetuating and the end is never in sight as long as the motive is to be ever alert to do things in the simplest and best way. Not only do the development of better and more efficient procedures justify the revision or complete re-writing of literature, but entirely new problems appear which demand cooperative attention with the objective of establishing uniform practice. These and other factors have contributed to the continuance of C.N.G.A.'s

Gus Wetzel

standardization program as can be illustrated by the following comments on studies which will soon contribute new or improved literature.

The procedure for measuring gas is simplified by the preparation of a Chartman's Manual arranged with all of the factors set up so that the routine calculation of corrected coefficients is made easier. The number of multipliers has been reduced from five to three.

The low temperature analysis procedure is being completely revised



C. H. Tuttle

toward the publication of a new bulletin. The fractionation technique is more clearly outlined and improvements in the apparatus will embody a kettle which can be used on gases, vapors or liquids, along with a better type of packing, permitting a more intimate contact between vapor and liquid, and through which no channeling occurs. Many other improvements have been worked out, among which can be mentioned the elimination of all rubber tubing connections, better heat control and boiling, and a supplementary burette arranged for the determination of the vapor equivalent of residues.

The determination of small

Here are the men who have made up the Technical Committee in the past two years.

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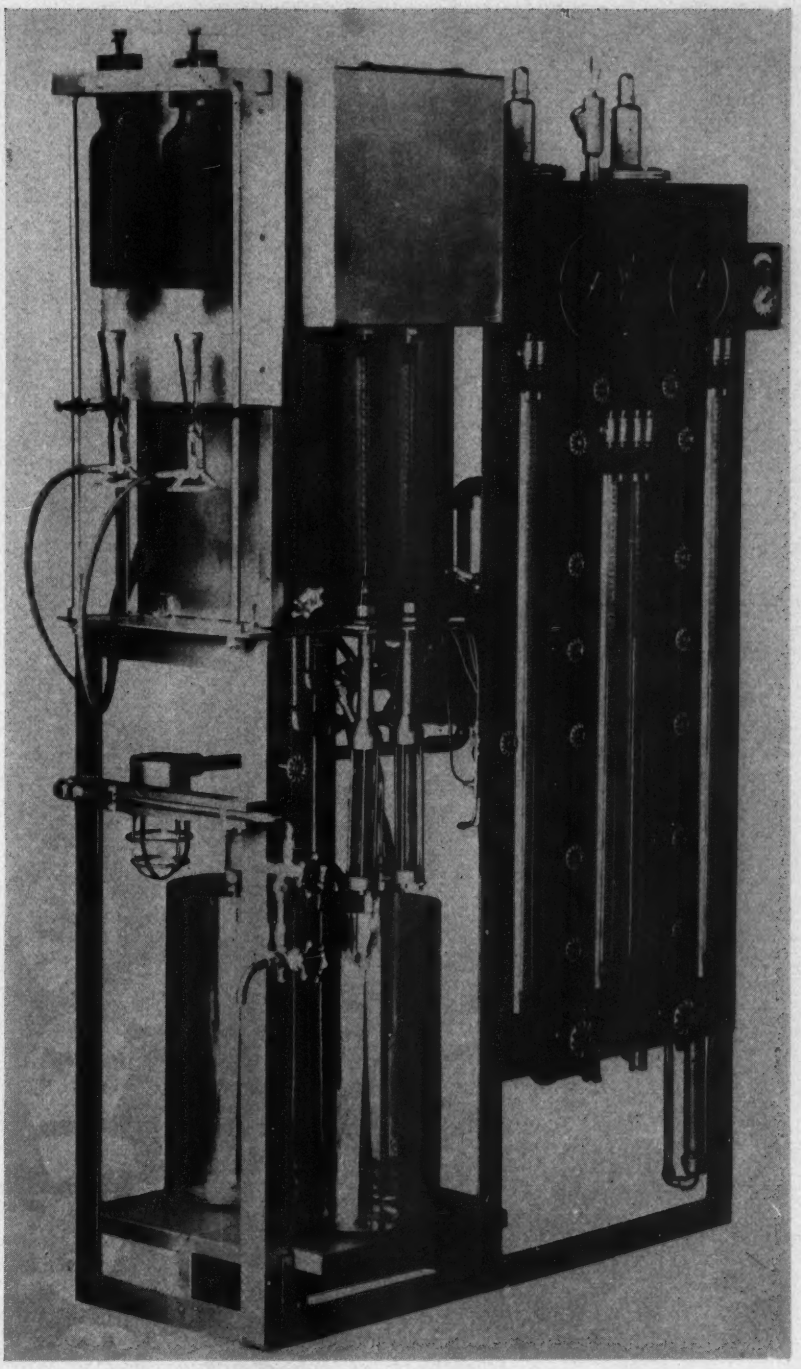
amounts of hydrogen sulphide in gases is being improved through a modification of the cadmium sulphate method, as described in A.P.I. Code 50A, which can be used where the concentration of hydrogen sulphide is below one grain per one hundred cubic feet. A colorometric method for rapid field testing which is felt to be superior to the lead acetate strip test is also being investigated.

In an effort to standardize the physical constants of components of natural gas and natural gasoline, a bulletin will soon be published which will contribute a uniform basis for the derivation of fundamental information applicable to analytical work and to inter-company transactions. A suitable vapor pressure chart will be provided which is made up largely of Cox graphs plotted with the logarithm of the absolute pressure against the reciprocal of the absolute temperature.

The Charcoal Test is receiving attention with the idea of perfecting a method for the determination of the percent of water vapor in gases. An improved table of Shrinkage Factors for correcting meter readings has already been completed.

It has been suspected for some time that the various drying agents used to dry gases prior to their introduction into the low temperature fractional analysis column were picking up hydrocarbons from the sample. Laboratory work by a C.N.G.A. committee is verifying this and the first set of tentative results have indicated that anhydrous calcium sulphate is the worst offender, with phosphorus pentoxide next. Calcium chloride is the best as far as the work has gone but much remains to be done. Work will also be done on the metals used in fabricating sample containers because it has been experimentally verified that metal containers bring about either the adsorption or condensation, or both, of hydrocarbon fractions on or into the walls of the container.



This is but one of the developments which have grown out of C.N.G.A. activity.

Safe practices in gasoline plants have been analyzed by a Safety Committee and the manuscript of a bulletin is in process of preparation which will cover safety suggestions on boiler plants, compressor plants, absorption and distillation systems, the storage and handling of gasoline, and general maintenance.

June Frolic Pictures

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1. Just before the first tee-off. 2. L. P. Sacre, A. Zwerneman, Fred Currie and John Lucas. 3. M. W. Kibre, H. A. Sting, E. P. Donohue, and H. T. Kraemer. 4. E. A. Roamer, R. A. Find, C. H. Britten, and Phil Lipschultz. 5. Looking toward playgrounds. 6 Frank Blake, W. A. Heinze, George Christen, and Walter Dayhuff. 7. The caddie master had a busy morning.

Here are some fellows you'll know: Back, left to right, Paul P. Daniel, Harry Grove, and unidentified. Front, H. L. Eggleston and George Ives.

The Liquid Petroleum Gas committee, now that the bulletin has been published, is actively maintaining contacts with other agencies interested in liquefied petroleum gas, as well as the deliberations of regulatory bodies. Questions on the interpretation of the bulletin are being handled also.

A committee on Engines and Compressors is beginning preparation of a practical handbook which will bring together much of the information now available only from sources which render the everyday use of such data not only a tedious process but often unreliable due to many differences in opinion as to what is authoritative and what is not.

Earle W. Gard Joins Bechtel-McCone-Parsons

Announcement of the appointment of Earle W. Gard, former manager of Research and Development of the Union Oil Co., to the staff of Bechtel-McCone-Parsons Corp. of Los Angeles, has been made by John A. McCone, president of that organization.

The appointment is a very important addition to the company's staff of experienced men required to keep pace with the rapidly widening scope of the organization's activities in serving the technical need of the oil industry. Mr. McCone said.

With the exception of a five year period from 1923 to 1928, when he was assistant engineer and refinery manager for Pan-American-Western Petroleum Co., Mr. Gard has held key executive engineering positions with the Union Oil Co. since 1919, and was in charge of development engineering, design, construction and operation of new processing plants, research, patent and economic surveys.

8. W. McGraw, E. H. Sheldon, Jack Delaney, and Bill Delaney. 9. A. H. Volpp, Chet Beard, and H. S. Donovan. 10. Al Hoover, J. S. Fluor, Earle Gard, and Monte Lindmoe. 11 Looking off the first tee. 12. W. E. Landis, George Christen and H. E. Leedy handled the golf detail. 13. M. E. Garrison, T. J. V. How, and E. W. Hammond. 14. Guy Corfield, Ralph Cutler, Ray Dearmin, and H. L. McCarty.

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With defense needs mounting, Bechtel-McCone-Parsons Corp. extended its activity—its defense assignments having included a smokeless powder plant in New Jersey, a navy yard in Orange, Texas, a larger power plant for the army in Alaska, extensive army port facilities, and numerous other National Defense undertakings.

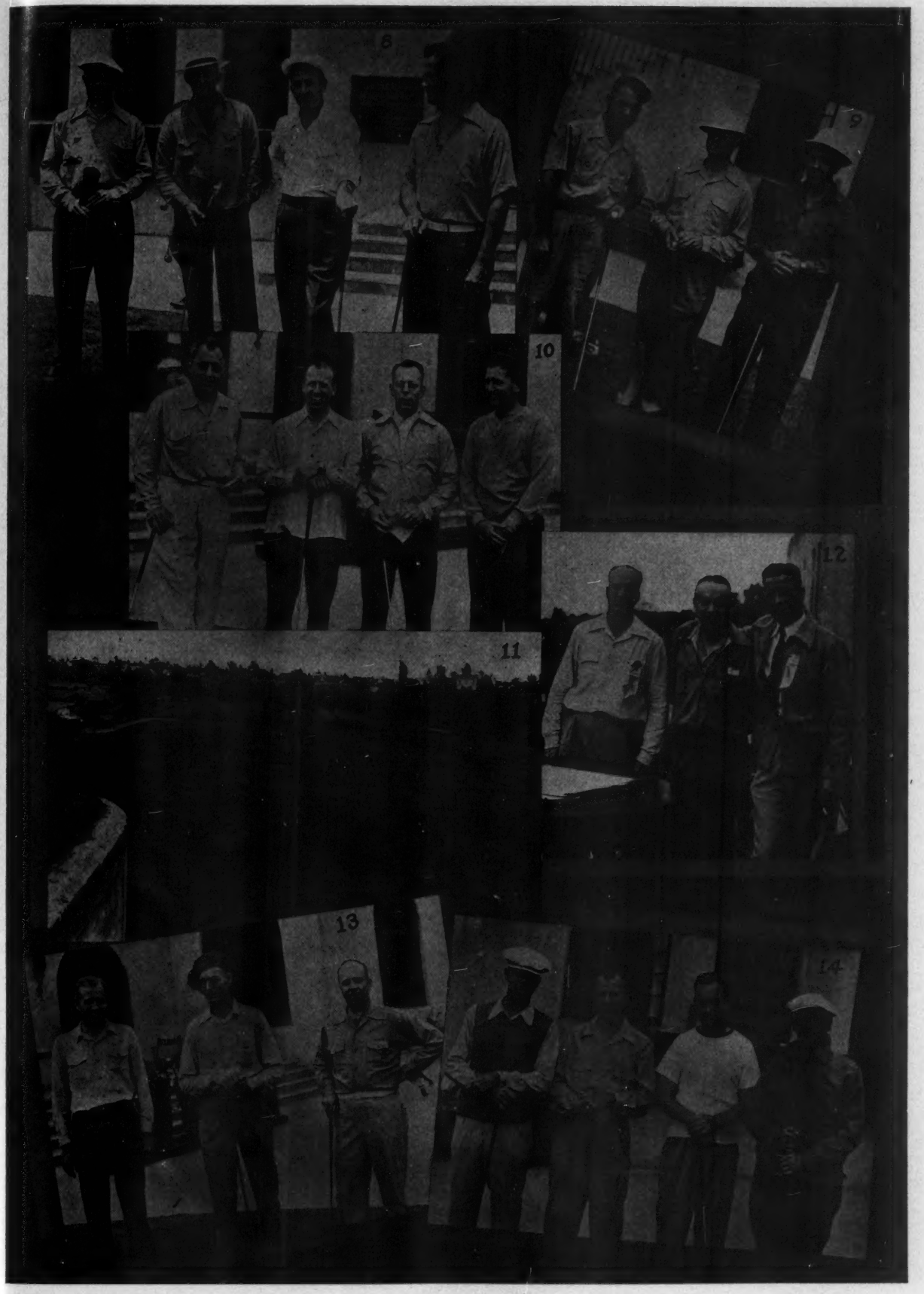
Recently the concern has become heavily interested in shipbuilding, its principals occupying executive positions in West Coast yards set up to handle a major portion of the emergency ship construction program of the Maritime Commission, to which yards contracts for several hundred cargo vessels have been awarded.

Mr. Gard will bring a background of wide experience to the Los Angeles engineering concern. A native of Ohio, he graduated from U.S.C. in 1917 with degrees in electrical and chemical engineering. His first position was as a Junior Lieutenant on the old battleship "Oregon", reconditioned for the first World War. He joined the Union Oil Co. at Los Angeles in 1919, being assigned to process and development work.

After an interlude with Doheny's Pan-American, during which he was assistant construction engineer and refinery manager of the Watson plant—now the Richfield Wilmington Refinery—he rejoined the Union Oil Co. as assistant to the late R. E. Haylett, director of manufacturing.

In 1933 he was put in charge of development engineering design, construction and operation of new processes.

In 1938 he became manager of research and development, which position he held up to his resignation from the oil company. He is a member of the American Petroleum Institute, Society of Automotive Engineers, American Society of Mechanical Engineers, American Chemical Society, and California Natural Gasoline Association.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Reminiscences of Early CNGA Meetings

Reveal Reason for Rapid Growth

The first officers of the California Natural Gasoline Association were Paul D. Barton, president; J. A. Campbell, vice president, and J. S. Watson, secretary. With these officers on the executive committee were: R. E. Beckley, H. L. Eggleston, I. B. Funk, R. W. Garman, H. W. Parmalee, and G. L. Ratcliffe.

For several months after the formation of the association in Los Angeles, the members from the Midway area made the long monthly trek to the regular meetings. It soon became obvious that a chapter of the association should be established at Taft, and the first officers of that chapter were R. E. Cameron, president; M. H. Morgan, assistant secretary, and D. G. Geraldine, vice chairman of the program committee.

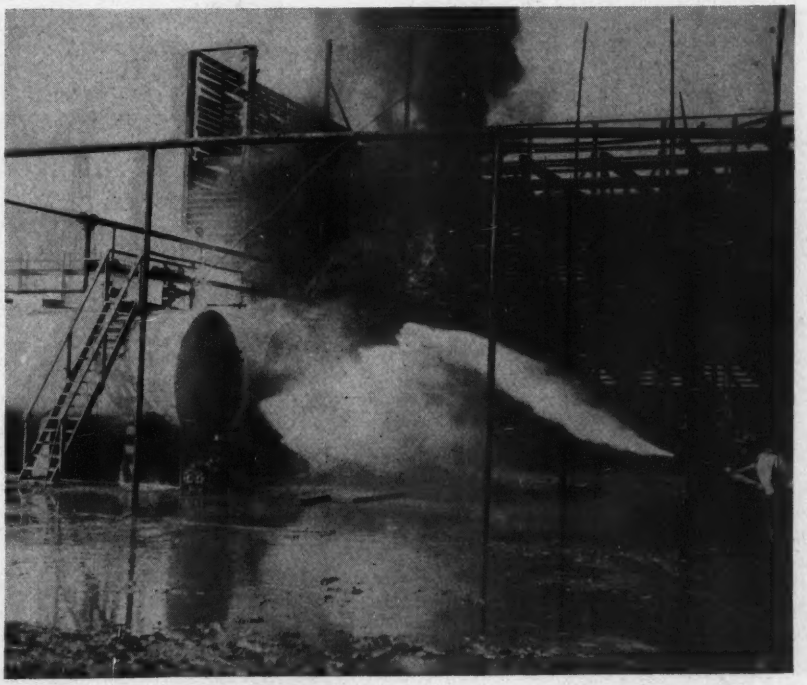
At one of the earliest meetings of the association in Los Angeles Julian Campbell, acting as chairman, pointed out another important function of the organization thus, after a roll call: "It is quite noticeable the way some of you here are evidently 'ganging up' on us. Now it has been suggested, and I really feel it's a good suggestion because of the fact that the acquaintances we make in these meetings are really about as valuable as any other good that we get out of them, that in seating ourselves at the table we do not get next to our associates in the same company."

At this same meeting came the happy announcement that the membership dues had been reduced from ten dollars a year to five. G. L. Ratcliffe made the following revelatory statement:

"Mr. Chairman and gentlemen. The Association has been organized about a year and we have had a number of successful meetings. We have not done much in the way of attempting to get members, but I think we have tonight about eighty seven paid up members and ten memberships that Mr. Carmichael just took a little while ago, that makes ninety-seven. At the last meeting we had something like 142 or 143 present. The expenses of the Association are not very great inasmuch as everyone pays for his own meal and we have no salaries to pay whatsoever—but there are certain expenses that we are going to have to meet. For instance, stamps, stationery—and if we have a 'loud speaker' at every meeting we are going to have to pay for that; then we will have to pay for stenographic services, and such items. If there were a full membership, for instance, if we had 150 members, that would only be $750 at $5 apiece, so you see it is quite important that everybody join if we are going to make a success of the Association."

That this statement bore fruit was indicated some months later when again Mr. Ratcliffe addressed the Association, this time as president.

"The California Natural Gasoline Association was organized in June, 1926, just 18 months ago. At the present time the association has a total of 362 members, 284 of which are active, and 98 are associate members. The active members are those who are engaged in the actual manufacture of natural gasoline or who are employed by companies manufacturing natural gasoline. Associate members are those who are interested in natural gasoline from some other standpoint but who are not actually engaged in the manufacture of natural gasoline. This class includes manufacturers and dealers in equipment and



Then they started thinking about safety engineers.

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15. Waiting to tee off. 16. G. W. Stevenson, Les Pickup, Worth Morgan, and Walt Kindred. 17. F. S. Burt, Ernie Adams, Harold Kerns, and Larry Blessing. 18. C. R. King, Bert Rico, Kenny Cook, and Fred Podmore. 19. Earl Lowell, Harry Fiske, and Paul Daniel. 20. E. V. Parker, J. B. Hughes, J. K. Veeder, and M. J Burress. 21. C. E. Pickup, Harry George, Bob Few, and Red Lawrence.

appliances in use in the natural gasoline industry."

By this time the board of directors had been expanded to include A. H. Bradford, O. C. Field, H. L. Eggleston, J. N. Hicks, H. R. Linhoff, H. E. Moulton, Lloyd F. Bayer, A. M. Porter, C. J. von Bibra, J. L. Denny, Ben A. Koehler, S. B. Mosher, E. R. Pratt, F. N. Rumbley, A. B. Scott, and J. F. Vordermark. These directors considered the program for the first Fall Meeting and decided on the following:

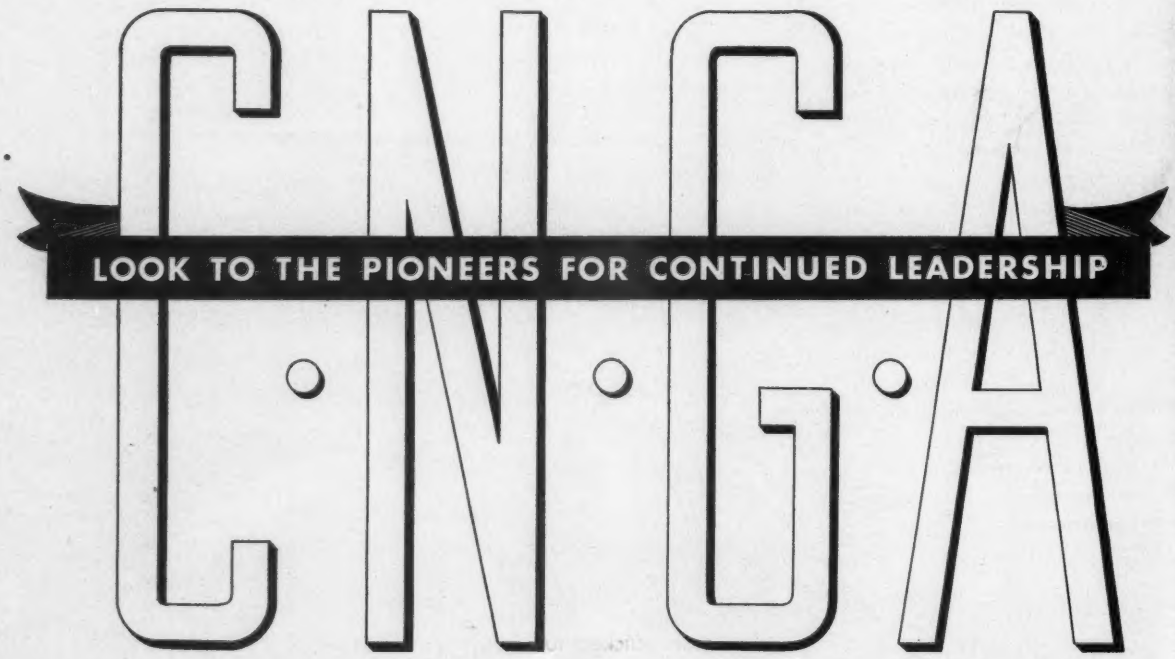
W. W. Robinson, Jr., California Gasoline Co., to lead discussion of proposed Standard Charcoal Test; D. M. Wolfe, Standard Gasoline Co., to lead discussion on Quality Survey of California Natural Gasoline; F. Champion, Southern Counties Gas Co., to lead discussion of Standardization of Barometric Pressure for Gas Measurement; Frank S. Burt, General Petroleum Corp., to lead discussion of The Determination of Vapor-Tension of Volatile Liquids; E. D. Cumming, Shell Co. of Calif., to lead discussion of Analytical Gas and Gasoline Fractionation; B. F. Masten, Standard Gasoline Co., to lead discussion of Safety and Fire Prevention in Gasoline Plants; Ross McCollum, Signal Gasoline Co., Inc., to lead discussion of Production of Natural Gasoline by Conservation of Vapors, and E. G. Ragatz, Union Oil Co., to lead discussion of The Value of Natural Gasoline as a Constituent of Motor Fuel.

In the year that followed that 1927 Fall Meeting, meetings were held each month at which a total of twenty-six addresses and papers were presented. The attendance at these meetings averaged over 200, and the membership of the California Natural Gasoline Association had grown to 600 members. Committees of the Association had cooperated in the solution of many minor problems confronting the industry. Some of those problems had been solved and others were still in the process of solution.

22. Coles Bason, Loren Green, F. J. Buckner, and Carl Madsen. 23. Stew Johnson, Larry Windle, H. E. Leedy, and Paul Daniel. 24. P. S. Magruder, L. S. Phelps, Clyde Wood, and E. E. Wood. 25. Joe Aderhold, Gordon Tunnell, Harold Davis, and Gilbert Nesheim 26. Ray Ellis, Al Barnes, and H. W. Havens. 27. Frank Colton, C. J. Lloyd, Dave Stuart, and Frank Coyle. 28. A. S. Joy, Bud Kelly, Jim Brown, and Al Piper.

During the year the "Tentative Standard Procedure for Making the 30-lb.-32° Pressure Charcoal Test for Gasoline Content" was published in bulletin form, and was being adopted as standard procedure by all of the California operators using this test for the determination of gasoline content. It was reported then that the adoption of this standard and its general use by the industry in California had resulted in a considerable saving to the industry, as well as in promoting harmony between the various natural gasoline companies, producers and royalty owners.

During the year (1928) the Association reported that it had stan-



NATURAL GAS EQUIPMENT, INCORPORATED

COMPLETE OIL AND GAS COMBUSTION AND CONTROL EQUIPMENT

LOS ANGELES • BAKERSFIELD • HANFORD • SAN FRANCISCO

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29. W. A. Bigelow, A. B. Callender, and Bill Hoag. 30. A. E. Holmlund, Jim Scott, J. Hills, and O. Branyon. 31. L. V. Cassaday, Tom Taggart, Jess Burk, and Frick Gibbs. 32. R. E. Dunn and W. A. Webb. 33. E. H. Sheldon and W. McGraw.

dardized the barometric pressure for use in the measurement of natural gas. The Association had taken an important part in conservation by means of its committees and statistical reports. Lack of statistical data on the production and utilization of natural gas proved a great handicap to the conservation committees endeavoring to handle this phase of the work. Due to the fact that the great majority of natural gas produced in California is treated in natural gasoline plants, the Association was in a position to gather the desired information and submit it in the form of a monthly statistical report.

The increased volume of the Association's work had made it necessary to secure permanent offices and employ a full time assistant secretary to handle details of the Association's business. The considerably increased expense was met by contributions readily proffered by the natural gasoline companies. These companies and the number of employes having membership in the California Natural Gasolines Association were at that time as follows:

General Petroleum Corp., 30 members; Standard Gasoline Co., 28 members, California Petroleum Corp., California Gasoline Co., 25 members; Pan American Petroleum Co., Petroleum Securities, 20 members; Union Oil Co., 25 members; Shell Co. of California, 14 members; Richfield Oil Co., Signal Hill Gasoline Co., 14 members; Lovell Gasoline Co., 10 members; Signal Gasoline Co., 7 members; Superior Oil Co., 5 members; Export Refinery Corp., 4 members; West Coast Refinery Co., 4 members; O. C. Field Gasoline Co., 3 members; Barton, Manning, Warner, 2 members; C.C.M.O., 3 members; Honolulu Consolidated Oil, 2 members; Lomita Gasoline Co., 2 members; Midway Gas Co., 2 members.

North American Oil Co., 2 members; Phillips Petroleum Co., 2 members; Wilshire Oil Co., 3 members; American Oilfields Co., 1 member; Associated Oil Co., 1 member; Bankline Oil Co., 1 member; Belridge Oil Co., 1 member; California Eastern Oil Co., 1 member; Edington Gasoline Co., 1 member; Gilmore Oil Co., 1 member; Holly Oil Co., 1 member; Industrial Fuel Supply Co., 1 member; Southern Counties Gas Co., 1 member; Standard Oil Co. of New Jersey, 1 member; T. P. Coal & Oil Co., 1 member; Torrance Gasoline & Refining Co., 1 member; United States Refining Co., 1 member; Miscellaneous, 5 members.

In the associate group were: Newton Process Manufacturing Co., 10 members; J. A. Campbell Co., 7 members; Southwestern Engineering Corp., 6 members; C. F.

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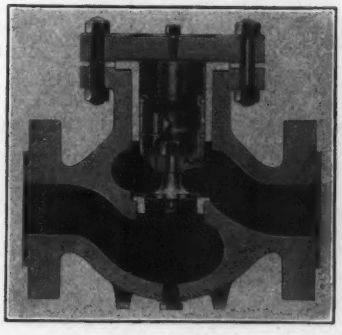

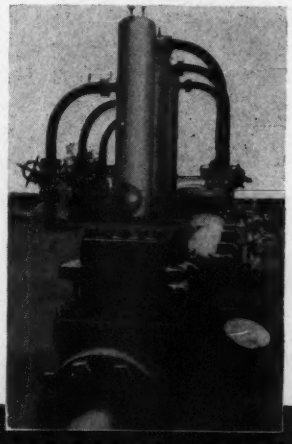

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Braun & Co., 3 members; Ingersoll-Rand Co., 3 members; Jensen Investment Co., Foxboro Co., 3 members; National Supply Co., 4 members; Neilan, Schumacher & Co., 3 members; Westcott & Greis, 3 members; Carbide & Carbon Chemical Corp., 2 members; Clark Bros., 2 members; Fluor Construction Co., 2 members; Natural Gas Equipment Co., 2 members; Smith Booth Usher Co., 2 members; American Supply Co., 1 member; Atlas Improved Engine Co., 1 member; De Laval Steam Turbine Co., 1 member; Gasoline Recovery Corp., 1 member; J. B. Gill Co., 1 member; International Filters, 1 member; Loomis Oil Well Contracting Co., 1 member; Los Angeles Manufacturing Co., 1 member; Luitweiler Pump Engineering Co., 1 member; Miller Improved Gas Engine Co., 1 member; F. C. Millard Engineering Co., 1 member; Pacific Pipe & Supply Co., 1 member; Smith Emery Co., 1 member; Smith Separator Co., 1 member; Thomas Machinery Co., 1 member; Warren & Bailey, 1 member; Worthington Co., 1 member; Jackson Engineering Equipment Co., 1 member; Miscellaneous, 3 members.

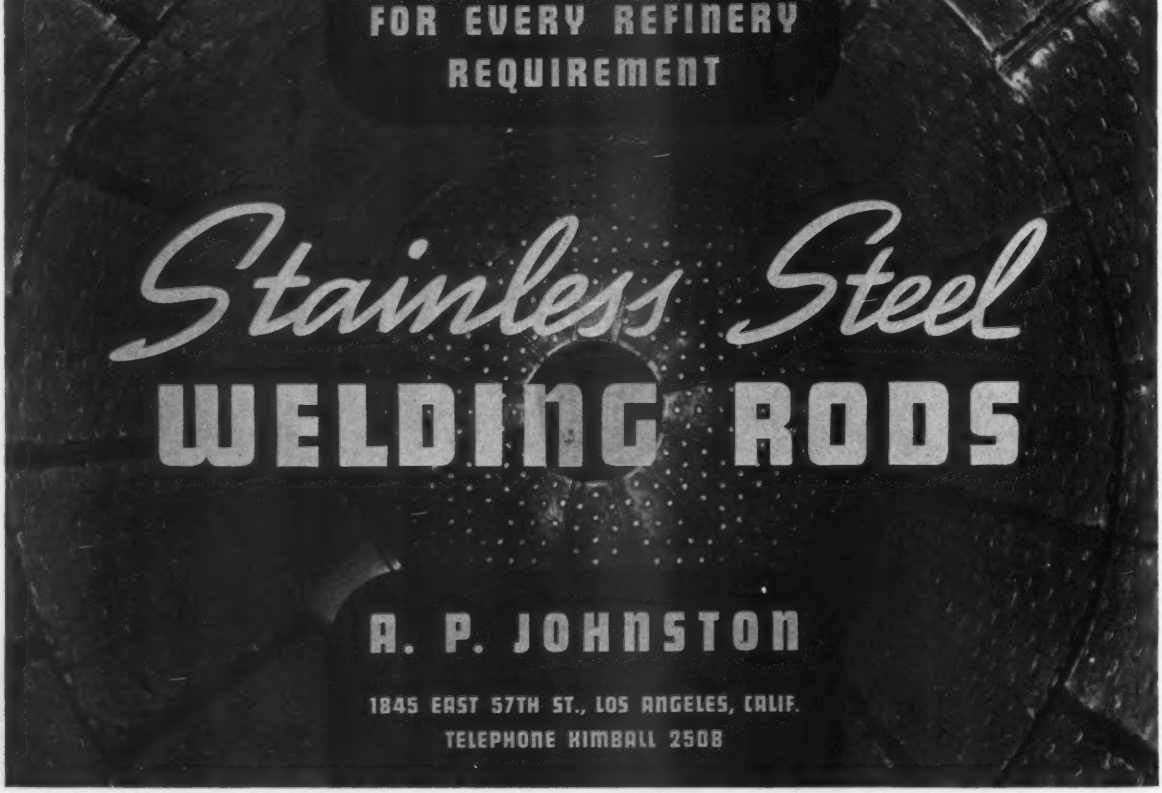
Just how the combination of sharply practical men and academicians found in the California Natural Gasoline Association works out to the advantage of those who attend the regular monthly meetings of the association is indicated in the following excerpts gathered from the Proceedings:

"Chairman Field (referring to a paper presented by Henry Wade on 'Distillate Recovery—An Engineering View of "Retrograde Condensation" '): I think we can safely say once again Henry Wade has rung the bell. That is a very excellent paper. You never disappoint us. In this paper we have several references to Dr. Lacey of the Industrial Chemistry Division of Cal Tech and he has very kindly consented to come down and say a few words on this topic.

"Dr. Lacey: Gentlemen; a number of years ago I had the honor of presenting a rather academic paper before one of these meetings and Mr. Wade was very kind in making some very pertinent and practical comments about that paper at the time. Now, that he has given you a pertinent and practical paper, it seems rather appropriate to me that I give you some rather academic comments upon it."

Following Dr. Lacey's discussion of complexities concerning conception of retrograde condensation (so-called), Mr. Geis began his practical discussion of the academic discussion of the practical paper thus:

"Mr. Geis: Mr. Chairman. Since Dr. Lacey has discussed the practical paper from an academic viewpoint, I would like to say something from a practical standpoint . . . I was particularly interested in that part of Mr. Wade's paper wherein he refers to the importance of this reaction (so-called retrograde condensation) on the Gulf Coast. I think I can assure you that the reaction of the Gulf Coast plants is no



more pronounced than it is here in the State of California. We do not talk so much about it nor do we have the plants using this reaction to recover commercial products. Nevertheless, I believe I can say with some assurance that practically all of the deep sands in the San Joaquin Valley, from which we are producing large quantities of oil and gas and large quantities of distillate are either wholly or partially under the control of this reaction which is at least called 'Retrograde Condensation'".

Foreshadowing the position of California Natural Gasoline Association as the clearing house for ideas in a timely and fast growing new field, was a paper read at the same meeting by S. H. McAllister:

"Mr. McAllister: . . . I have been concerned with the study of the manufacture of highly branched hydrocarbons, which we are now becoming so familiar with in aviation gasoline, since the time of the first cold acid plant which was installed about 1934.

Roy Hoffman is another old-timer who helped make C. N. G. A.

"This paper which I am to deliver (Conversion of Light Hydrocarbons to High Anti-Knock Aviation Fuels) is essentially a review. There is nothing particularly new in it, but perhaps it is well to have a paper of this type now, because it shows the background through

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which we have moved in the past few years, and by knowing that background we will probably have a better indication of where we are going in the next few years."

Two of the discussions presented at the conclusion of Mr. McAllister's paper indicate the caliber and impartiality of the materials available to those who attend the meetings of the California Natural Gasoline Association:

"Mr. Adams: To many of us sitting on the sidelines during the development and commercialization of the various processes for production of high quality aviation gasoline, this paper is well timed and decidedly beneficial. Furthermore, Mr. McAllister, who has played a leading part in Shell Development's commercialization of three of the eight major processes listed, deserves credit for the impartial manner in which the subject has been handled."

Mr. Adams continued with an appraisal of certain points brought up in Mr. McAllister's paper, and was followed by Mr. Day:

"Mr. Day: . . . It would be of interest to see where the Natural Gasoline Industry fits into the aviation fuel picture, both present and future . . . Mr. McAllister indicated that the dehydrogenation process would probably be in large commercial use now, if alkylation hadn't developed. However, dehydrogenation makes it possible to convert normal butane into butylenes and therefore increases the supply of aviation gasoline by the hot acid and Shell process of hydrogenation. Another way would be to alkylate after converting the butanes to isobutane by isomerization, another process which is all ready for commercial application where ever the need arises."

These excerpts from Proceedings should indicate how well the California Natural Gasoline Association is carrying out its objectives: 1. Concerted effort toward improving and perfecting apparatus, equipment and processes of manufacture. 2. Elimination of waste and duplication of effort. 3. Recommendation of uniform test methods, specifications, etc. 4. Stimulation of thought and effort on the part of individual members through presentation of interesting and instructive programs at their monthly meetings.

While much of the most valuable work of the California Natural Gasoline Association is hidden in anonymnity, there has been from the beginning no hesitation on the part of most of the members to take up the task of preparing papers for presentation at the regular monthly meetings. You will find the names of many present leaders in the industry among the authors. A list of the articles presented during the early years of the Association's history shows clearly why the association's future growth and establishment as a necessary aid to the California industry's progress was assured.

Authors and the titles of their papers in those first few years were:

1926—A. F. Semino and F. L. Kallam: Fundamentals of Heat Exchanger Design. E. D. Cummings: New Testing Method Solves Tough Problem for Gas Plants. F. M. Beeson: Methods of Treating Water for Use in Natural Gasoline Plants. E. R. Cox; absorbent Oil Cooling. M. O. Jensen: Recording Instruments in Natural Gasoline Plants. L. V. Cassaday: Fire Hazards and Fire Prevention. Robert A. W. Bultmann: Discussion of a Method for Rating and Comparing Performances of Open Coils in Cooling Towers. W. D. Cook: Physical and Chemical Aspects of the Charcoal Process of Gasoline Recovery.

1927—Gordon M. Jackson: The Relative Possibilities of the Two Types of Cooling Systems for Natural Gasoline Plants, F.A.E. Lowell: A Discussion of Cooling Tower Design , Operation and Maintenance in Gasoline Plants, J. L. Glennon: Study of Care and Operation of Boilers Needed to Reduce Yearly Toll of Boiler Accidents. F. S. Burt: The Role of the Oil and Gas Industries in the Extraction of Helium from Natural Gas. B. F. Masten: A Few "First" Principles of First Aid and Their Application in Every Day Work. George Bowersox: Gas as a Boiler Fuel. J. V. Thomas: Accurate Pressure Is Essential to Efficient Gasoline Plant Operation. E. G. Ragatz: Simple Steam Distillation. J. W. Reed: Use of Gas Engines and Compressors in the Natural

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Memo

to OIL COMPANIES who want to Cut Costs

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3. **Because** *Industrial Indemnity pays substantial Cash Dividends annually.*

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Please send me, without cost or obligation, full details on your method of reducing Compensation Costs

Name _____

Address _____

Gasoline Industry. J. E. Kobernick: Welding as Applied to Absorption Plants. A. K. Hegeman: The A. W. Hubbell Patents, and a Discussion of Isothermal and Adiabatic Compression. E. F. Jones: Slide Rule Built to Order for the Computation of Gas Volumes from Orifice Meter Charts.

The California Natural Gasoline Association was not long in completing an analysis of its own organization and the desires of the membership in the matter of subjects for discussion at the regular monthly meetings. Not long after the organization of the association the roster contained 500 names. The association determined to classify the members in different groups so that it would know how many operators, metering, testing men, etc., there might be, and the percentage of different classes in the different groups. It was also desired to know what proportion of each membership class attended the meetings regularly, and where their interests lay. A questionnaire was then sent to the 500 members.

At that time, the papers of most general interest appeared to be, in the order of preference, those on Motor Fuel, Steam Distillation, Gas Engines and Compressors, and the Charcoal Test. In considering the types of papers ten different classes were established. Listed were technical papers, such as metering, testing and laboratory methods, which led with 14 per cent of the votes. A close second came the papers on design and engineering, design of cooling coils and cooling towers and subjects of that nature. Then followed the papers on Research and Development, Operation and Equipment Testing, and Material Testing, Safety and Fire Prevention, Accounting and Contracts, held least attraction for the members in those early days of the association.

Acacia shipped East from the West is now sprayed with dyaclorahydrene ethylene from petroleum refineries to preserve its freshness.

Petroleum Accountants Elect Dwight A. Moore

Dwight A. Moore, assistant secretary-treasurer and controller of the Wilshire Oil Co., Inc., was elected president of the Petroleum Accountants Society at a recent meeting of the Society. Other officers elected for the ensuing year are: Irving J. Hancock, Union Oil Co. of California, 1st vice-president; N. J. Allen, Lincoln Petroleum Co., 2nd vice-president; Chas. V. Slack, General Petroleum Corp. of California, secretary-treasurer.

Mr. Moore succeeds W. A. Russell, Seaboard Oil Co. of Delaware, who was president of the Society during the past twelve months. A. F. Hagen, Shell Oil Co., Inc., and John P. Vezzetti, Sunset Oil Co., were reelected to the Society's board of directors. John F. Baumgaertner, Ohio Oil Co., was elected to fill a vacancy on the board.

Mr. Moore, the new president, is a certified public accountant, and holds degrees from the University of Southern California and Harvard University School of Business Administration. He is a member of the Controllers' Institute, and the State Society of Certified Public Accountants. He belongs to Sigma Alpha Epsilon fraternity. He has been connected with the Wilshire Oil Co., Inc. since 1926.

B. E. Devere Heads Independent Refiners

Bert E. Devere, General Manager of the Pathfinder Petroleum Company, has been elected the new President of the Independent Refiners' Association succeeding R. E. Hines, of the Caminol Company, who resigned this week.

"The Independent refiners of California are cooperating 100 per cent with other industry and the Government's National Defense Program," stated Mr. Devere. "The California oil industry is in an excellent condition and we are confident that it will continue to adequately meet all demands on it."

Previous to the election, Mr. Devere had been First Vice-President of the Independent Refiners. Other appointments were: C. A. Johnson, President of the Socal Oil and Refinery, who was named a Director, taking the place on the Board left vacant by Mr. Hine's resignation; M. M. McCallen was also made a Director of the oil association.

Roy Young Spuds Castaic Wildcat

Roy Young, Inc. spudded Walker No. 1 in sec. 11,4-16 and is making rapid time through surface formations. Located on "Conroy Dome", the project is regarded as one of the most promising exploratory wells now active in the state.

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TIDE WATER ASSOCIATED OIL COMPANY

ASSOCIATED AVIATION ETHYL

Field Development

Los Angeles Basin

Engineer Outlines Inglewood Completion

One of the most interesting completions in the Los Angeles Basin was recently effected by Jefferson Oil Co. at Inglewood. Questioned as to the method employed, Engineer W. E. Dunlap told the story in the following words:

"Methods of bringing in flowing oil wells are as numerous as there are makes of drilling bits. The method of completion as programmed by S. M. Brooks and his associates for the Jefferson Oil Co.'s Smith Well No. 1 was probably the simplest yet the most efficient way this writer has had occasion to observe.

"First let us review the casing data, depths, etc. The 12¾-in. casing was cemented at 777 ft; the 7-in. string cement at 7372 ft. The 4¾-in. extreme line casing was landed on bottom 8091 ft., and included 327 ft. of perforations, 12 rows, 120 mesh. The top of the liner is 7319 ft.

"A total of 8075 ft. of tubing including 7290 ft. of 2½-in. upset and 785 ft. of 2-in. upset was landed 16 ft. off bottom. The necessary Xmas tree connections and master gates all tested under 6000 lbs. pressure were installed.

"Water fluid was pumped around the short way or in other words, between the outside of the tubing and the inside of the 7-in. casing. This was continued until almost fresh water displaced the mud laden fluid coming out of the 2½-in. tubing.

"The circulation was then reversed and 12 barrels of acid was pumped down the tubing. It took 1500 lbs. pressure on the surface to get that acid on bottom. Since the pressure of a column of water fluid 8091 ft. in depth is approximately 3500 lbs. per square inch on bottom, the sum of the surface pressure exerted (1500 lbs.) and the hydrostatic head (3500 lbs.) equals 5000 lbs. per square inch on bottom hole pressure present during the acid spotting. Please note the casing valves were naturally all open during the above operation.

"After the acid was spotted the fluid was left to "soak" one hour and forty-five minutes with all valves closed, tubing as well as casing.

"At the end of that time the pressure gauges on the tubing and casing were 1350 lbs. and 1850 lbs. respectively. The bean on the tubing was then opened to 60/64 of an inch; it required 30 minutes for this operation. All this time the well was flowing and the water fluid plus acid started to color up and in 30 minutes more it was almost black.

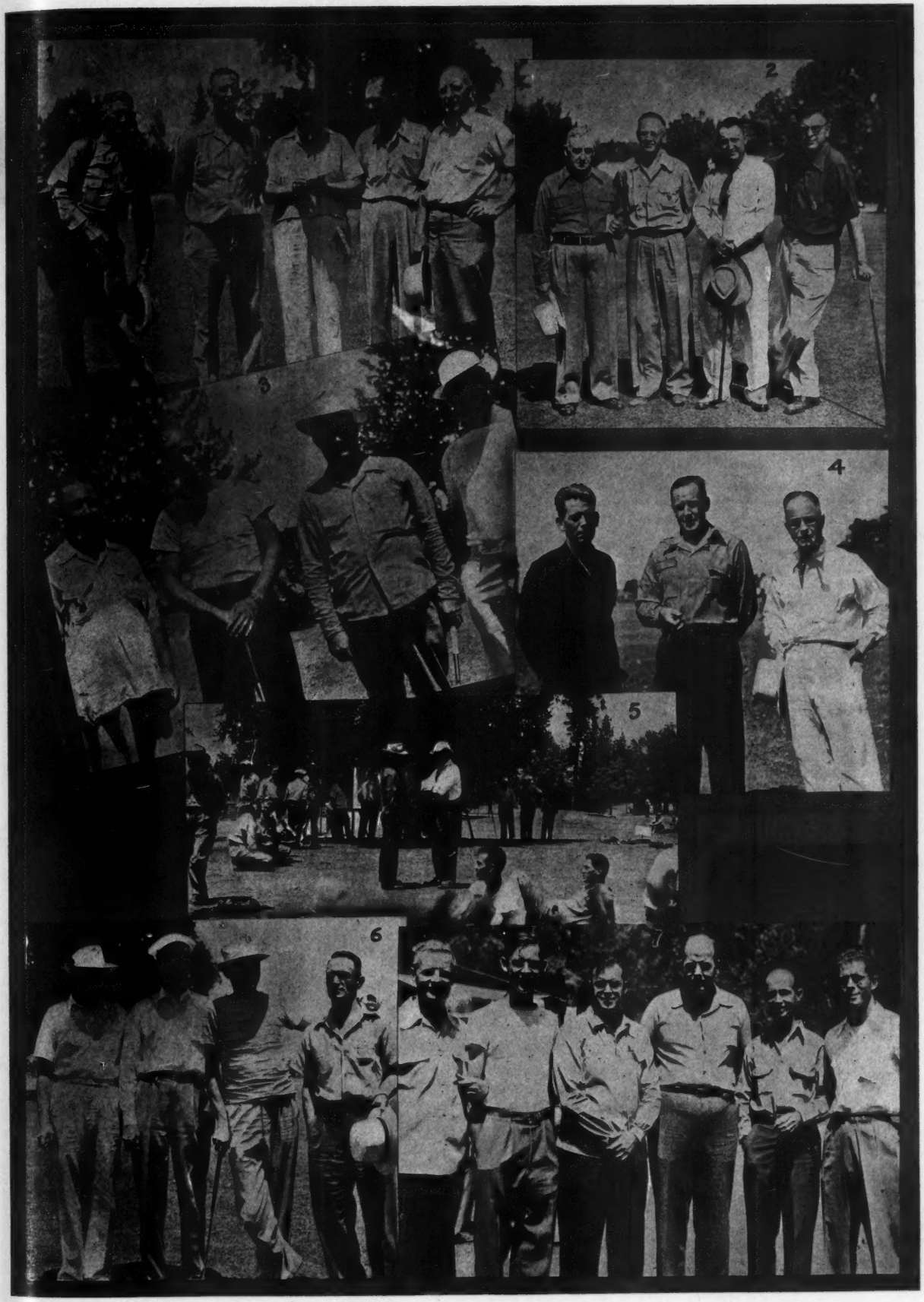
San Joaquin Valley Oil Men's Annual Tourney Pictures.

→

Caddy, Frank Smith, Jack Wilcox, Elmer Price, and Les Black. 2. J. D. Long, I. H. Bettis, D. D. Long, and Paul Talbert. 3. Paul Terry, Jim Emrick, Roy Pickens, and Jim Kimble. 4. Jerry Bowen, Bob Ritner, and J. B. Stevens. 5. At the first tee. 6. H. E. Chapman, Bill Cline, Ralph Clemons, and Tex Little. 7. Harry Taylor, Vic King, Spud Lamb, R. E. Golemon, Sim Dunham, and Steve Gurasich.

LOS ANGELES BASIN WILDCATS

Area	Well	No.	Section	Depth	Status
Athens	Rankin & Williams	1	7, 3-13	9204	Coring
	Lytle, Robt. S., Operator, Anderson	1	1, 3-14	7000	Drilling
Castaic	Barnsdall Oil Co., Honor Rho A-19-1		7, 4-16	5759	Drilling
	Jasper, Fred S.	1	17, 4-17	5984	Testing
	Morse-Mangold, Inc., McDermott	1	26, 5-17	1966	Idle
	Western Gulf Oil Co., Lechler	2	31, 5-17	7178	Testing
	Young, Roy W., Inc., Walker	1	11, 4-16	100	Drilling
Coyote—West	Wilshire Annex Oil Co., Comm.	1	14, 3-11	7400	Drilling
Dominguez, West	Wood-Mellon Oil Co., Wood	1	31, 3-13	7498	Redrilling
El Segundo	Dominguez Ext. Oil Co., Dominguez-Sunset	1	19, 3-14	7865	Redrilling
Inglewood	Cliff Baker, Operator, L.A.I.	1	29, 2-14	6555	Idle
Newhall	Aztec Oil Co., Sanborn	1	6, 3-16	4300	Idle
	St. Anthony Oil Corp., La Salle	1	10, 3-16	2043	Drilling
	The Texas Co., Whitnah	1	14, 3-16	4999	Testing
	Tunnel Oil Co., Needham	1	13, 3-16		Location
Palos Verdes	Newton Development Co., Palos Verdes	1	13, 5-15	1604	Drilling
	Surety Holding Co.	1	22, 5-14		Foundation
Puente Hills	Kosanke, J. F., Dragna	1	24, 2-10	1328	Idle
	Sunset Oil Co., Baldwin	1	11, 2-11		Rig
Redondo	Cherokee Oil Co.	1	32, 3-14		Bldg. rig
	Jergins Oil Co., Dominguez	1	5, 4-14		Rig
Whittier-La Habra	Bristol Oil Co., Cole	1	2, 3-11		Foundation
Wilmington-Torrance	A. S. Johnston Drlg. Co.	41	29, 4-13		Location
	Main Drilling Co., Well	1	19, 4-13		Rig
	Orange County				
Costa Mesa	Thompson, Milton N., Banning	1	9, 6-10	5649	Cleaning out
	San Bernardino County				
Chino	Prado Oil Corp., Lamp	1	32, 2-7	640	Idle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"The oil was turned into the tanks at 2 a.m. June 16th and a gauge showed the fluid was flowing at the rate of 108 barrels per hour, cutting 2.6% acid, water and mud. In another hour the cut was one-tenth of one per cent, and the gravity of the oil 33.3° A.P.I. The well then was beaned back to 12/64 in.

"The following day a potential test was made. Under a 60/64-in. bean the well produced its maximum which was at the rate of 2290 B/D. The tubing pressure was 650 lbs. and the casing 1650 lbs. The production of gas was 6,200,000 cu. ft. with 1.7 gasoline content.

"It is of course, admitted that the rock pressure in the producing zone played a major part in bringing about the success of the above method. However, the mere fact of displacing the mud-laden fluid with water thru the casing first, in my opinion was the reason the well cleared up so quickly.

"The drilling and completing of an oil well in the Baldwin Hills Area is no easy matter and routine affair. Two major obstacles are forever present—a complicated structural problem and loose, cavey shale formations at certain intervals. The organization headed by S. M. Brooks got over the first hurdle by relying upon correlations resulting from four runs made with the electric log plus a lot of common practical sense, and not getting into the position of being "over-engineered". The second obstacle was taken care of by religiously watching the mud laden fluid for proper weight, viscosity, water loss, filter cake and above all the application of the proper kind of chemicals.

"However, as more wells are completed the problems will become simpler and the structural pattern will finally unfold itself. With such production and pressures as the Federal and Jefferson wells have shown it is a good bet that the entire northwest end of the major structure has excellent oil production possibilities from the deep or so-called Sentous zone."

As more becomes known about the deep zone, operators are proceeding with more assurance and several wells will be completed in rapid-fire order. Federal Oil Co. Smith No. 2 set 7 in. casing at 7873 ft. and is now making its last few feet of hole. Hogan Petroleum Co. is coring for the deep zone after a formation test of sand from the 7 in. shoe at 7096 ft. to 7224 ft. recovered mud, water and oil. This horizon is stratigraphically higher than the Sentous zone and may be commercially productive on top of the structure.

Other wells nearing the high pressure sand are Oscar Howard-Jergins No. 1, R. R. Bush Oil Co. Smith No. 1 and R. R. Bush Oil Co. Merchants No. 1, the latter being the lowest of the group structurally. Royalty Service Corp.'s Marlow-Burns No. 1, an outpost, is below 7000 ft.

The Texas Co. is completing R. C. Smith No. 7 at 8189 ft. after topping the deep zone at approximately 7840 ft.

→

8. Fat Dunlap, George Thompson, Neil Cox, Larry Morris, and Cecil Barton. 9. Chris Rector, Henry Stringer, Lou Marsh, and Ross McLoud. 10. Noel Chapin, C. T. Blanchet, J. B. Hill, and Ed Smith 11. Otto Lamb, and Hap Thompson. 12. All was calm. 13. A. F. Turman, Art Mason, H. E. Cross, and J. H. Bray. 14. W. R. Patterson, Hoyt Jones, C. W. Dewing, and Charles Lanzit.

Royalty Service Tests Long Beach Outpost

Bottoming at 9070 ft., Royalty Service Corp. is preparing to gun-perforate casing and test Burgess No. 1. The well is located several hundred feet north of production on the east side of Orange Ave.

Nedal Oil Co. is drilling Well No. 5 south of State St. near Termino Ave. at the east end of the field. Depth is below 3000 ft.

Shell Oil Co. is drilling Hamilton No. 5-A after losing the hole in No. 5 and has

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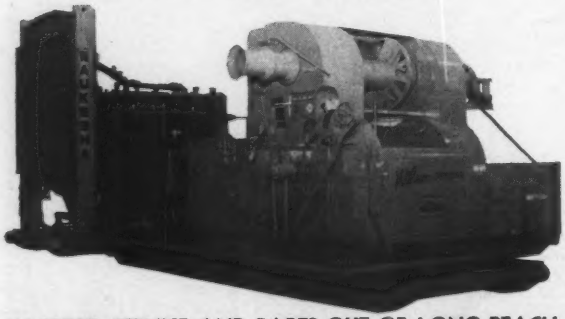

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Patterson-Ballagh now makes available an improved line of Drill Pipe and Casing Protectors. Tight-gripping annular lips are provided at both ends of the Protector. By adding lips, "ringing" or grooving of drill pipe is eliminated. Swirling action of the mud takes place at the bottom of the lip on the rubber instead of in the corner of the pipe. These extended lips are molded as an integral part of the rubber. They give the Protectors more streamlining. The lips form a sealing ring which prevents mud from getting behind the Protectors. Extension of the lips at top and bottom adds approximately 15% more contact area and more grip.

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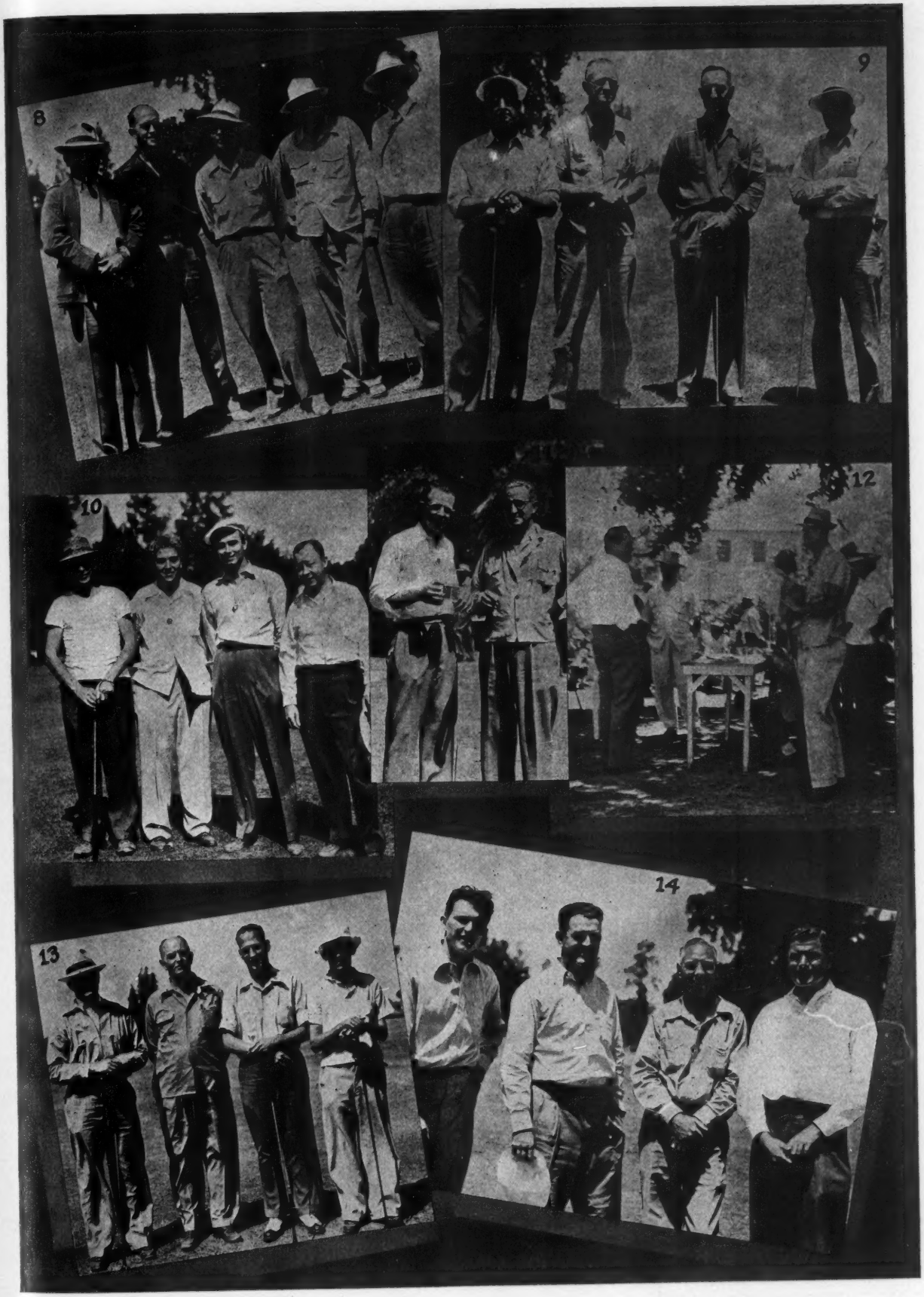
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THE SPIRIT OF 76

by JOHN CLINTON

* * *

"A primrose by the river's brim, a simple primrose was to him, and it was nothing more." So wrote W. Wordsworth (I think!). And in my early days I felt that "A gas station by the highway's rim, a simple station was to him, and it was nothing more!"

* * *

And then I began this precarious career, and Union Oil stations came into my life. I'd like to tell you something about them. First of all, things *happen* at Union Oil stations. The Minute Men who operate them, in addition to serving your ordinary needs, also find time for such things as:

* * *

Looking for cats that jump out of cars; helping put out neighborhood fires; pumping up bicycle tires for neighborhood small-fry; blowing up toy balloons for parties; making temporary emergency repairs with such materials as hairpins, string and odds and ends.

* * *

Lending campers can openers, supplying boots to a forgetful fisherman, minding Junior while his mother went to vote, helping youngsters across unguarded intersections, rushing a bottle of Union Glass Cleaner over to a neighboring airport, extracting miscellaneous articles from back of rear seats.

* * *

What a business! The reason I mention it here is simply this... Union Oil Company's Minute Men are good neighbors, wherever you find them. It's Union's great pride, its constant joy that you, the customer, are generally well and quickly served at Union Oil stations – no matter *what* you want! 'Ever try it?

UNION OIL COMPANY

locations surveyed for Alamitos No. 47 and Babb-Tucker No. 9.

Dumm Bros. Petroleum Corp. No. 11 on the north slope of Reservoir Hill is pumping an estimated 60 bbls. a day. On California St., west of the cemetery, Apex Petroleum Co.'s Kirkpatrick No. 27 is below 2800 ft.

Wood-Callahan Completes Good Torrance Producer

Wood-Callahan Oil Corp. brought in its Dominguez Estates No. 1 pumping 100 bbls. daily of 18 gravity oil to renew interest in the northwest section of the Redondo-Torrance field. Located on the westerly portion of the old Union Oil Co. Francis lease south of 190th St., the well was drilled to 3730 ft. and finished with 8⅝ in. casing cemented at 3318 ft. and a 5½ in. liner containing prepack perforations landed on bottom.

Jergins Oil Co. took over another portion of the Dominguez Estate properties and is preparing to drill its first well approximately 2000 ft. southeast of the Wood-Callahan project. Considerable interest is being shown in leases in the vicinity and several more wells will probably be drilled in the near future.

The success of Wood-Callahan's well in an area long condemned is attributed to the use of the prepack type liner and to the cementing of the water string below the top oil sands which are very loose and tend to sand up the perforations. It is now claimed that the northerly productive limits of the field were never reached in this section and that a large area is now proved for development. Accordingly, lease hounds are checking ownerships along the north edge of the old field and are apparently ignoring the abandoned wells on the properties.

L. A. Basin Wildcat Progress Reported

Rankin & Williams resumed operations and are deepening their 122nd St. and Main wildcat below 9200 ft. making it one of the deepest exploratory wells ever drilled in the Los Angeles Basin. Some gas has been noted on the ditch but nothing worth testing has been encountered.

At the northeast corner of Imperial Highway and Western Ave. between the Athens and Potrero fields, Robert S. Lytle, Operator is coring below 7000'. Little information other than depth is released on this well which hopes to find more permeable sands than those found by El Rey Oil Co. across Western Avenue.

Cliff Baker has temporarily suspended drilling in his L.A.I. No. 1 in sec. 29,2-14 northwest of the city of Inglewood. Mr. Baker plans to install heavier equipment to carry on from present bottom at 6555 ft.

Geo. Snyder is cleaning out the Wood-Mellon Oil Co. project at the corner of Figueroa St. and Victoria Ave. preparatory to testing from 6830 to 6860 ft. Total depth of the hole was 7498 ft. before being redrilled.

The Fullerton Oil Co. is testing La Habra No. 7 in the area discovered by No. 6 southeast of the old Whittier field in sec. 25,2-11. The hole was bottomed at 3005 ft. where 6⅝ in. casing was landed and cemented through perforations at 2415 ft. Three intervals are perforated between 2420 and 2954 ft. Contractor Tom Pike has moved equipment to No. 8 which is drilling below 1000 ft.

Main Drilling Co. is ready to spud its semi-wildcat located east of Main St. and a quarter of a mile south of Sepulveda Blvd. (Willow St.) at the extreme east end of the old Torrance field.

Havenstrite Abandons Del Valle Outpost

Finding no commercial sands at 7906 ft., R. E. Havenstrite, Operator, abandoned Lincoln No. 3 in the southeast section of the Del Valle field. The well was much lower than the field's two producing wells but because of differences in sedimentation, no accurate correlations could be made. A test from 7368 to 7390 ft. yielded a large flow of salt water.

The Havenstrite interests are drilling two wells at comparatively shallow depths and are preparing to drill another, Lincoln No. 6.

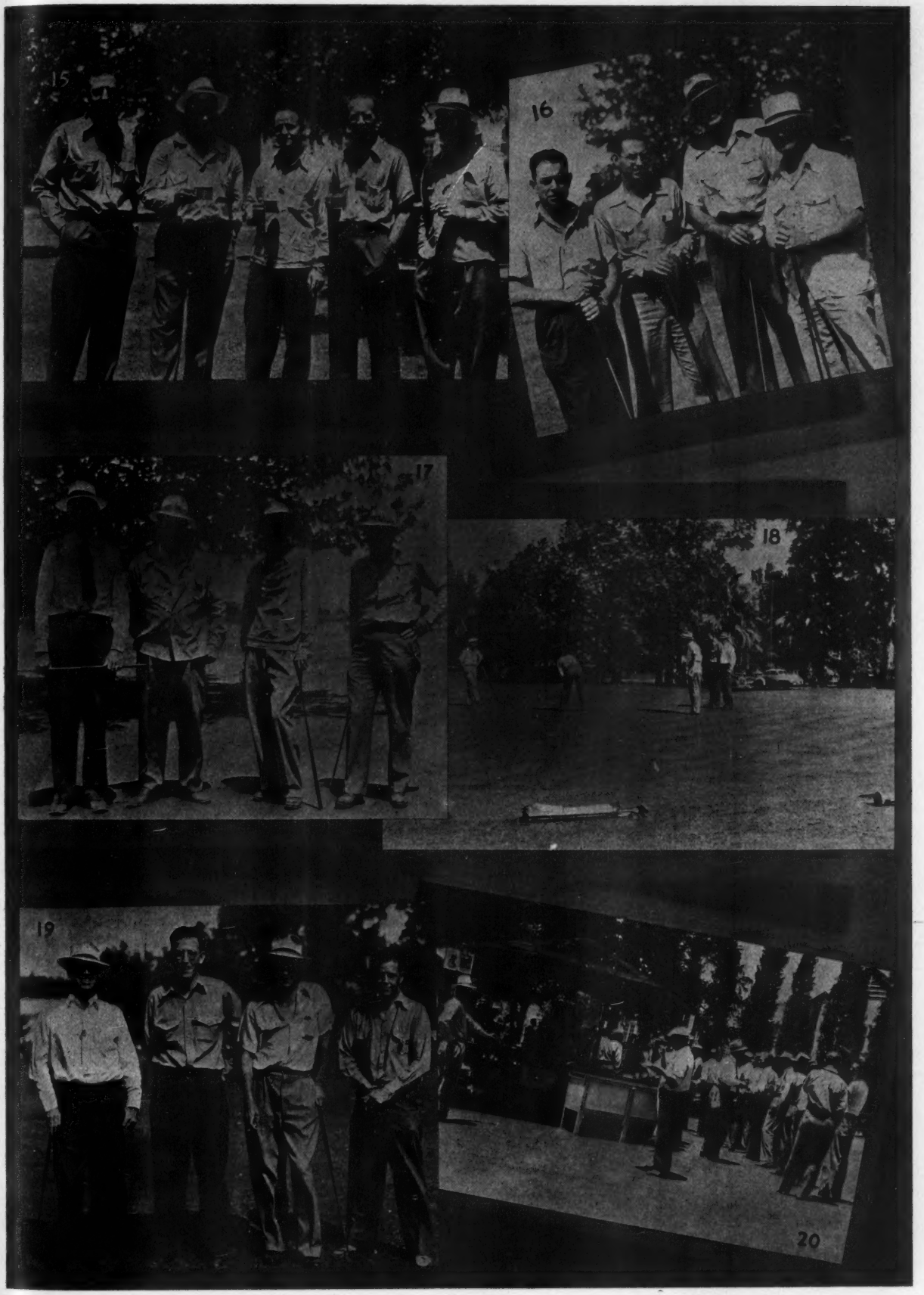
Fred Jasper Tests Castaic Discovery

Fred S. Jasper is testing his important wildcat west of Del Valle after logging what looks like a high pressure oil and gas horizon from 5890 ft. to bottom at 5984 ft. Located in sec. 17,4-17, the well found sands generally similar to those in the field to the east from which it is thought to be separated by a major fault.

Soil mixed with emulsified asphalt and water and dried can be made into building bricks, Illinois researchers have discovered.

→

15. Dick Stanier, Bud Johnston, Tommy Andrew, Roy, Spradlin, and Earl Mires. 16. C. R. Napier, W. A. Clark, J. R. Nuchols, and G. O. Suman. 17. F. R. Tolf, C. W. Inman, Ed Pellegrin, and O. A. Cavins. 18. Putting form. 19. Frank Taylor, Dick Stanier, Tom Fitzgerald, and Joe Shea. 20. Eats were plentiful.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San Joaquin Valley

Speed Drilling Becomes Habit

Due to continued improvement in drilling technique and equipment, rapid completions from all depths are no longer a rarity.

Latest of the relatively deep wells to conform to present fast drilling standards is Shell Oil Co.'s 8220 ft. KCL No. A-7-29 in the Ten Section field.

Located in sec. 29,30-26, the well was spudded on 5/21/41 and a 9⅝ in. surface string cemented at 993 ft. A 5½ in. combination string including 231 ft. of perforations was landed on bottom at 8220 ft. and cemented thru perforations at 7985 ft. after which the well was turned to the tanks on 6/14/41, a lapsed time of only 25 days.

Completed flowing thru a 16/64 in. bean, the well initialed 302 bbl. in the first 14 hours. On the first 24 hour gauge the well made 515 bbls. of 35.7 gravity oil cutting only 1.2% thru the same orifice. A highly desirable gas-oil ratio was accomplished since only 554,000 cu. ft. of gas was measured with the flow, very close to the perfect 1 for 1 ratio. Tubing pressure was 1150 lbs. and 2380 lbs. registered on the casing.

Buttonwillow Well Hits Hard Oil Sand

The Texas Co.'s S. P. No. 47-15, deep test in sec. 15,29-24, is coring at 11,967 ft. in hard gray sand and shale with streaks of very tight oil sand. The horizon, encountered at 11,820 ft., is not considered promising.

Third deep test in the area, the showings are typical of those in the earlier tries which proved too tight and impermeable to afford production.

Lacking the discovery of better sands it is probable that the well will plug back for tests of shallower sands which gave some promise on formation trial at 10,958 ft.

Famoso Wildcat Cores Gray Eocene

Chanslor-Canfield Midway Oil Co.'s Famoso No. 12-1, in sec. 12,27-26, is coring in gray sand and shells at 6443 ft. after finding the top of the barren Eocene at 6242 ft. The Vedder proved barren at 5010 ft.

B. V. Hills Deep Well Nears World Record

Last reported drilling in hard shale at 14,586 ft., Honolulu Oil Corp.'s No. 25-P is now only 418 ft. short of Continental Oil Co.'s 15,004 ft. world depth record.

Most remarkable feature of the great depth achieved is the fact that the hole has been made with an electric rig designed for only moderate depth. Already having far surpassed the previous depth record for such power, and challenging the depth of steam driven holes, the record is said to have surprised even the operators who had expected to be forced to curtail deep exploration due to rig inadequacy far above this point.

From the productive stand point, little has been accomplished, so far, since there have been no substantial showings except high gas pressures which required fast mudding operations to keep the well under control.

W. Greeley Tests Prove Failures

With the operators making no pretensions of discovery, only withholding drilling data, a general impression of immediate discovery in Superior Oil Co.'s KCL No. 13, six miles west of the Greeley field, has been disproved by current tests.

Located in sec. 18,29-25, the well first excited general comment when 8⅝ in. casing was cemented at approximately 10,075 ft. and a tester ordered for trials of what were rumored to be promising sands. Still the company officials said nothing. Subsequent information discloses that formation tests of stringers of sand in the intervals 10,075-10,110 ft. and 10,075-10,154 ft. recovered only a little oil, gas and salt water.

The well is at present coring ahead at 10,407 ft.

Shell Oil Drills East Mount Poso

Latest of the east Valley wildcats is Shell Oil Co.'s Smith No. 46-11 in sec. 11,26-27. Situated northwest of the Mount Poso field, the try seeks Vedder

SAN JOAQUIN VALLEY WILDCATS

Area	Well	No.	Section	Depth	Status
Fresno County					
Cantua Creek	Seaboard Oil Corp., Hagood	1	6, 17-13		Rigging up
Friant	Gay, D. M.	1	3, 11-21	30	Drilling
Gatos Creek	Gatos Creek Oil Co.	1	19, 19-13	810	Idle
Raisin City	Gen. Pet. Corp.. Burrel	1	2, 17-18		Rig
	Shell Oil Co., S.A. & F.L. Land	1–19	19, 15-18	4693	Drilling
Kern County					
Belridge—South	Section 27 Oil Co., Aslin	1	27, 28-22	210	Drilling
	Sentinel Oil Co.	1	10, 28-20	2880	Drilling
Buttonwillow	The Texas Co., S. P.	47–15	15, 28-24	11967	Drilling
Devils Den	Herzog, R. D., Collins	1	26, 25-18	359	Idle
	Herzog, R. D., Marine	29	26, 25-18	181	Completed
	Herzog, R. D., Marine	30	26, 25-18	215	Rigging pump
	Herzog, R. D., McKay	1	26, 25-18	451	Idle
	Herzog, R. D., Marine	B–1	26, 25-18	708	Idle
Edison	Crude Oils, Inc., S. P.	7	31, 29-30	460	Idle
	Kern Valley Drlg. Co., Williams	1	30, 30-30	1106	Abandoned
Famosa	C.C.M.O. Co., Famosa	12–1	12, 27-26	6443	Drilling
Grapevine	Continental Oil Co., Tejon	A–1	28, 11-19	6105	Abandoned
	Kern Line Oil Co.	1	19, 11-19	8390	Idle
	Richfield Oil Corp., Tejon	2	19, 11-18	2960	Drilling
Greeley—West	Superior Oil Co., KCL	13	18, 29-25	10407	Drilling
Lost Hills	Tide Water Assoc. Oil Co., Isolis	46	16, 27-21	4093	Drilling
Maricopa	Bankline Oil Co., Well	57–23	23, 11-23	1104	Stdg. plugged
McClung	Ohio Oil Co., KCL	G–1	36, 29-26	8611	Drilling
	Union Oil Co., KCL	31–3	3, 30-26	12022	Drilling
Mt. Poso	Carey, J. F., U. S.	1	34, 26-28	1355	Idle
	Shell Oil Co., Smith	46–11	11, 26-27	62	Drilling
Paloma	Union Oil Co., Morgan	81	14, 32-26		Rig
Richgrove	Borget, A. J., Kendall	1	16, 25-27	1700	Idle
Shafter	Continental Oil Co., KCL	C–2	35, 27-24	11349	Redrilling
Kings County					
Kettleman So. Dome	Bristol Oil Co., Smith	1	35, 24-19	8054	Idle
Pyramid Hills	Phillips Oil Prod. Co.	1	13, 24-18		Foundation
	Pyramid Prod. Co., Spreckles	2	16, 24-18	190	Drilling
Reef Ridge	Blair Oil Co., Blair	1	24, 23-16	985	Abandoned
	Blair Oil Co., Blair	1A	24, 23-16		Rig
	Easterbrooks, S. F.	1	11, 23-26	715	Idle

zone production comparable to that found in nearby fields. Last reported as spudding, the well will be drilled under contract by the Ivy Drilling Co.

Richfield Spuds Grapevine Test

In sec. 19,11-19, at the westerly limits of the Tejon Ranch, Richfield Oil Corp.'s Tejon No. 2 was spudded under contract by Bell & Loffland.

Last reported at 2960 ft. in lower Fruitvale shale, the well will probably be carried to sufficient depth to afford proper geological orientation on the company's vast south Valley holdings.

Maricopa Test Pumps Salt Water

Bankline Oil Co.'s second Maricopa flats well, No. 57-23 in sec. 23,11-23 recovered only salt water on a pumping trial from bottom at 1104 ft. The well is standing plugged at 955 ft. for further tests.

Second Shell Well Seeks Proved Sands

Shell Oil Co.'s Santa Ana & Fresno Land No. 1-19, in sec. 19-15-18, one location south of Properties No. 8-18 in the Raisin City area, is drilling at 4895 ft. in search of the sands which proved productive in the discovery well from 5005 to 5045 ft.

The well in continuing after testing 8 ft. of oil sand at 4693 ft., which, with packer at 4673 ft. from which 185 ft. of heavy oil was recovered on a one hour formation test.

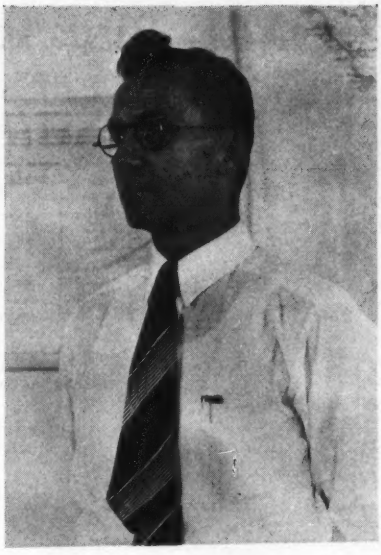
Last production in the discovery well was 21 bbls. of 36 gravity clean oil and 1,415,000 cu. ft. of gas through a 16/64 in. bean.

Nine miles to the southeast, in sec. 2,17-18, General Petroleum Corp. has rig up for Burrel No. 1 which will be drilled under contract by Bell & Loffland.

Emil Huguenin Assumes New D. O. G. Status

Emil Huguenin, for many years deputy in charge of the Los Angeles district of the State Division of Oil and Gas, has assumed the position of Assistant Chief of the Division. The appointment was awarded on the basis of a recent competitive civil service examination.

Mr. Huguenin, who will make his headquarters in San Francisco after the first of August, will be relieved at Los Angeles by E. H. Musser who at present is in charge of the Taft and Bakersfield offices of the Division. H. V. Dodd will move from Coalinga to fill the south San Joaquin Valley vacancy while E. J. Caplow will become Deputy at Coalinga.



Emil Huguenin

Mr. Huguenin plans to spend much of his time in the field coordinating the work of the five district offices of the Division.

Jack L. Axelson Becomes Benedict

Announcement was made recently of the marriage of Jack L. Axelson, the son of D. F. Axelson, Vice-President of the Axelson Manufacturing Company, to Marilyn Bennison, daughter of Arnold D. Bennison of the General Petroleum Corporation of California. The couple was married June 3, 1941, at the First Congregational Church in Los Angeles, and left following the ceremony for a short wedding trip.

Jack Axelson, whose grandfather, C. F. Axelson, was one of the founders of the Axelson Manufacturing Company, is a third generation member of the family to start out learning the oil well pump and engine lathe business in the plant. Following his graduation from Whittier College two years ago, Jack started out in the plant foundry and has since been transferred to the lathe assembly department where he has been working on the assembly of Axelson Lathes for government defense orders. On their return the couple will make their home in Whittier.

Seaboard Rigging West Cantua Try

West of the Cantua Creek central area, near the westerly Fresno county line, E. A. Bender Drilling Co. is rigging up to drill Seaboard Oil Co.'s Hagood No. 1. Located in sec. 6,17-13, the well is in a comparatively undrilled area except for a few shallow wells a little more than a mile removed from the present site.

Waxes are being found efficacious in preventing steel machinery corrosion.

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Coastal District

Santa Maria Valley Speed Record Made

Establishing what is believed to be a new record for the Santa Maria Valley field, Union Oil Co. had Adam No. 3 on production the ninth day after spudding in. Located in the southwest corner of the northeast quarter of sec. 24,10-34, the well topped Miocene at 2075 ft., Franciscan at 2545 ft., and bottomed at 2565 ft. A 5¾ in. combination string containing 470 ft. perforated was landed on bottom and cemented at 208 ft., the top of the perforated interval. Swabbed in through the casing, production was 1560 bbls. of 15.6 gravity clean oil under 280 lbs. flow pressure. Union is preparing to complete Battles No. 3 and has foundation in for Moretti No. 1-4, both offsets to the new producer. These wells are located in the east end of the large field in the area of shallowest production and near the point where the Miocene pinches out between the Sisquoc and the Franciscan basement.

Union Oil Co. is nearing final depth in Nicolai No. 3 in sec. 28 and has derrick up for Bradley Lands No. 2-2 in sec. 36. The latter well adjoins Bradley Lands No. 2-1 which extended the field to the southeast a few months ago.

Bel-Air Oil Co. is drilling its first Santa Maria Valley well on the Twitchell property in sec. 35-10-34 between producing wells of California Lands., Inc. and the Robert S. Lytle Rembusch No. 1 outpost. Wells in this area generally come in for high yields of rather low gravity oil.

In section 28, Pacific Western Oil Co. is drilling Carranza No. 1 while Signal Oil & Gas Co. is under way with Newlove No. 4 in sec. 26.

Mesa Well Finds Vaqueros Barren

Trans-Oceanic Oil Co.'s M'divani No. 7 at Santa Barbara Mesa found the Vaqueros barren at 1990 ft. and continued on as a Sespe test. At last reports the well was below 2200 ft. with the top of the red beds placed at 2110 ft.

Signal Pet. Finishes Hopper Canyon Project

With bottom at 3573 ft. and the hole open below 2885 ft., Signal Petroleum Co. recently finished Hadley No. 7 on the pump at Hopper Canyon. The initial rate was reported at 140 bbls. of 30 gravity clean oil.

In sec. 22,4-19 between Sespe and Hopper Canyons, Intercounties Fuel Co. is drilling Hinkler No. 1 below 1075 ft. in brown shale.

O. C. Field to Drill Cat Canyon Wildcat

O. C. Field Gasoline Corp. is preparing to drill a wildcat test for Sisquoc production in the northeast quarter of sec. 24,9-33 approximately a mile northwest of the old East Cat Canyon field. The project will be known as Palmer Stendel No. 24-1.

Standard Oil Co.'s Los Flores Land & Oil No. 2 is drilling in cherty Miocene shale below 5500 ft. This is the third well to be drilled to the Monterey production in sec. 27,9-33, west of the West Cat Canyon field.

COASTAL COUNTIES WILDCATS

Area	Well	No.	Section	Depth	Status
Santa Barbara County					
Cat Canyon	O. C. Field Gasoline Co., Palmer Stendal	24–1	24, 9-33		Grade
Goleta	Del Mar Oil Co., Rowe	1	11, 4-28	675	Idle
	Trans-Pacific Oil & Drlg. Co., Hollister	2–A	3, 4-29	1573	Abandoned
Summerland	Stokes, L. E., Glenray	1	1, 4-26	285	Fishing d.p.
San Luis Obispo County					
Huasna	Tex Harvey Oil Corp., Gilmore Comm.	1	11, 32-14	4253	Pumps water, trace oil
	Tex Harvey Oil Corp., Gilmore Comm.	2	11, 32-14	2200	Idle
Paso Robles	Epco, Inc., Epco	1	27, 26-13	6157	Idle
Ventura County					
Bardsdale	Cook Osmere, King	1	33, 4-19	25	Idle
	Fetterman, C. W. & Hunter, K. H., Capitol Crude	1	7, 3-19		Rig
	Fetterman, C. W. & Hunter, K. H., Capitol Crude	2	7, 3-19		Location
	Hopland Oil Co.	1	1, 3-19	2558	Drilling
	Fairfield, F. E., Fairfield-Fillmore	1	12, 3-20	3473	Pumping
	Palma Oil Co.	1	8, 3-19	2215	Drilling
Ojai	Oil Prod. Maintenance, Inc. Byhara	1	12, 4-22	625	Drilling
Piru	Glen Ogles Oil Co., Janes	1	16, 5-18	2863	Idle
	Havline & Pottenger, Alice	1	33, 4-18	1715	Cleaning out
Sespe	Chob Oil Co., Phillips	1	24, 4-20	106	Idle
	Inter Counties Fuel Co.	1A	22, 4-19	1070	Drilling
	McCaslin, W. E., Burson	1	19, 4-19	2000	Reaming
	Signal Petroleum Co., Hadley	7	13, 4-19	3576	Completed
South Mountain	Comstock Pet. Co.	1	17, 3-29	1820	Cleaning out
	Loose, E. H. & Dietzmann, J.	1	17, 3-20		Rigging up
	South Mountain Oil Co.	1	10, 3-20	2750	Pumping water
Timber Canyon	Crude Oils, Inc., West	1	19, 4-20	762	Drilling

NORTHERN COUNTIES WILDCATS

County	Well	No.	Section	Depth	Status
Colusa	Pacific National Pet. Corp.	1	17, 17n-4w		Rig
Contra Costa	Lafayette Oil Co., Morris	1	28, 1n-2w	1450	No report
Glenn	Holly Sugar Co.	1	32, 22n-1w	2516	Drilling
Mendocino	Keyt, N. F.	1	3, 12n-17w	670	Drilling
Monterey	Loma Grande Oil Co., Corey	1	23, 24s-10e	3695	Idle
	Priest Valley Pet. Co., Greve	1	22, 20s-12e	2885	Idle
	Amerada Pet. Corp., Calif. Lands	1	3, 3n-3e	4283	Completing
	Amerada Pet. Corp., Upham	1	18, 3n-3e		Location
Sacramento	Amerada Pet. Corp., W&R Comm.	1	3, 3n-3e	4300	Completed
	Jergins Oil Co., Twitchell	1	8, 3n-3e		Grading
	Standard Oil Co., N.G.C. Unit	1	5, 3n-3e		Location
	Superior Oil Co., Larsen	1	8, 3n-3e		Location
	Superior Oil Co., McCormac	1	9, 3n-3e		Location
	Portable Drlg. Equip & Supply Co.	1	35, 8n-4e	119	Idle
San Joaquin	Standard Oil Co., Blewett	3	23, 3s-6e		Location
Stanislaus	Don Pedro Oil Co.	1	9, 6s-9e	1906	Idle
Solano	Standard Oil Co., Suisun Comm.	1	36, 4n-2w		Grade
Yuba	Wright, L. G., Cox	1	18, 14n-5e	1795	Idle

THIS LAUGH OFF!!

Bill Robinson lays aside his beakers long enough to give us this one:

"Dearest Martha," wrote the lovesick swain, "I could swim the mighty ocean for one glance from your lovely eyes. I could walk through a wall of flame for one touch of your little hand. I would leap the widest stream for a word from your warm lips.—As always, Your Own Percival.

"P.S. I'll be over to see you Sunday night, if it doesn't rain."

And **Tom Taggart** picked this one up: The principal speaker of the evening was something of a bore. After he had been trying the patience of his hearers for half an hour, the chairman noticed that a diner on his right was snoring gently, so he tapped him lightly with the gavel.

A second time the diner dozed, and the gavel brought him back.

Again the snoring became audible and the chairman, losing patience, wielded the gavel more vigorously.

"Go on," was the sleepy answer, "hit me again; I can still hear him."

E. C. Edwards reveals that poker playing geologists, that is, geologists, refer to East Coalinga as "Spit in the Ocean."

"Can you write?"

"Nope."

"Can you read?"

"Well, I kin read figgers pretty well, but I don't do so good with the writin'."

"How is that?"

"Well, take these here signs along the road when I want to go somewheres; I can read how fur, but not where to."

When the wind changed the skunk moaned: "It all comes back to me now."

"What kind of dress did Martha wear to the party last night?"

"I don't know. I think it was checked."

"Boy, that must have been some party."

"At first it was love. He fascinated me, and I kissed him."

"Yeah, I know, and then he began to unfascinate you, and you slapped him."

Apropos of nothing, we are reminded of **Cece Winslow's** story:

"But darling, if I marry you I'll lose my job."

"Can't we keep our marriage a secret?"

"But suppose we have a baby?"

"Oh, we'll tell the baby, of course."

And Liz, the demon steno, avers that the gals will be wearing the same thing in brassieres this season.

We seem to become more and more decadent as the years pass. Among the 40 new plagues which have recently been advertised by manufacturers are: Acid Blues, Birdcage Mouth, Bridge Table Slump, Floor Pox, Headline Jitters, Lobsteritis, Vacation Figure, Radiosis, Transportation Fatigue, Five O'Clock Shadow.

The first morning after the honeymoon, the husband got up early, went to the kitchen and brought his wife her breakfast in bed. Naturally, she was delighted. Then her husband spoke:

"Have you noticed just what I have done?"

"Of course, dear, every single detail."

"Good. That's how I want my breakfast served every morning after this."

Not even to a fictitious entity would we ascribe the following:

Wife: My husband has no bad habits whatsoever. He never drinks and he spends all his evenings at home. Why, he doesn't even belong to a club.

Visitor: Does he smoke?

Wife: Only in moderation. He likes a good cigar after he has a good dinner, but I don't suppose he smokes two cigars a month.

Which reminds us of the story of the three Italian bombers which encountered a British aircraft and were shot down into the sea.

The crews, numbering 12 in all, were picked up by a British battleship and put to bed in the spare top bunks.

Next morning, when the captain inspected them, he found they were bruised black and blue.

"Hey, what's happened to these prisoners?" he enquired.

"Well, sir," explained a sailor, "one of them kept saying 'Spitfire, Spitfire,' in his sleep. And everytime he said 'Spitfire,' the other 11 bailed out."

Names used on this page are entirely fictitious, and any resemblance to persons either living or dead is purely coincidental.

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Oil Men's Calendar

Calif. Natural Gasoline Association. Los Angeles Chapter—Meets 1st Thursday Each Month, Barker Bros. Bldg., Los Angeles—Dinner at 6:00 (Optional). Taft Chapter—Meets Third Thursday Each Month.

American Society of Mechanical Engineers—Los Angeles Section—Meets 2nd Thursday Each Month—Barker Bros. Bldg., Los Angeles. Dinner at 6:30 (Optional).

September

8-12—American Chemical Society, Chalfonte-Haddon Hall, Atlantic City, N. J.

17-19—National Petroleum Assn., 39th Annual Meeting, Hotel Traymore, Atlantic City.

25-26—Society of Automotive Engineers, National Tractor Meeting, Schroeder Hotel, Milwaukee, Wisc.

29-30—National Lubricating Grease Institute, Ninth Annual Meeting, Stevens Hotel, Chicago, Ill.

October

16-18—American Institute of Mining & Metallurgical Engineers, Petroleum Division, Dallas, Tex.

30-Nov. 1—Society of Automotive Engineers, National Aircraft Production Meeting, Biltmore Hotel, Los Angeles, Calif.

31—California Natural Gasoline Assn., Los Angeles, Calif.

Fairfield Tests Bardsdale Well

F. E. Fairfield's Fillmore No. 1, sec. 12,3-20 at Bardsdale is again on the pump after repairing bad casing at 1900 ft. Because of mechanical trouble, the 3473 ft. well has never been on production long enough to get an accurate estimate of its capacity but it looks like it should make a good pumper.

Clarence W. Fetterman and Kenneth H. Hunter have derrick erected to drill on Capital Crude property in the northwest corner of sec. 7,3-19.

East of Bardsdale in sec. 8,3-19, Palma Oil Co. is drilling below 2250 ft. in its Elkins No. 1 while in sec. 1 of the same township. Hopland Oil Co. is past the 2600 ft. mark.

New Firm Rigging South Mountain Well

E. H. Loose & Julius Dietzmann, newcomers to the field, are rigging up to drill Lodie No. 1 in sec. 17,3-20 at the east end of South Mountain.

On the south flank of the structure, South Mountain Oil Co. is continuing to test for production at 2750 ft. in well No. 1. Results, so far, are said to be unsatisfactory.

"Tex" Harvey Resumes Drilling at Huasna

With Gilmore Community No. 1 pumping only a very small amount of heavy oil from plugged depth of 4250 ft., "Tex" Harvey Oil Corp. is preparing to deepen No. 2 from 2200 ft. Objective is the Vaqueros which may underlie the Miocene brown shales at this location. Both wells are located in sec. 11,32-14, San Luis Obispo county.

Timber Canyon Well Drills Below 775 Ft.

Crude Oils, Inc. West No. 1, located in sec. 19,4-20 at Timber Canyon, is drilling below 775 ft. and carrying 8⅝ in. casing. Formation, according to president Geo. Goodrum, is blue shale.